SURVEY OF COMPOUNDS WHICH HAVE BEEN TESTED FOR CARCINOGENIC ACTIVITY

SUPPLEMENT 2

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1969

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CORRECTIONS

1. Compound 202 (Nitrosodimethylamine) should be included in the listing for Compound 148 (Dimethylnitrosamine).
2. Compound 576 (4,4′-Di(Dimethylamine)-azobenzene) should be included in the listing for Compound 554 (4,4′-Bis(Dimethylamine)-azobenzene).

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INTRODUCTION

The present Supplement 2 to "Survey of Compounds Which Have Been Tested for Carcinogenic Activity" (covering the period 1954 through 1960) has retained the format of the previous editions.

It is not the purpose of this survey to pronounce upon the carcinogenicity of a tested material. It is merely an organized abstract of the literature in which the reports of the original authors are recorded. From time to time the views of the abstractors on the interpretation of some experiments may differ from that of the original authors, and on rare occasions this has been stated in the footnotes. In addition, there may be some difficulty in the interpretation of some of the footnotes regarding the number of animals with tumors versus total number of tumors in the group of animals, and the occurrence of more than one cell type of tumor in the same animal. In such cases the information necessary to provide clarification was not available. No attempt was made to standardize abbreviations; they should, however, be meaningful to the reader when taken in context. It is, therefore, of paramount importance that this survey not be used as a reference to the carcinogenic activity of a material. It is a guide to the original literature and the worth of each entry must be carefully evaluated by the reader. The authors have attempted to include as much information as possible within the space allocated, but this is often merely enough to provide a basis for debate on the biomedical significance of the results. A positive entry in the column recording tumor incidence obviously does not mean that a substance has been unequivocally shown to be carcinogenic to the satisfaction of even the majority of workers. There are quite a number of instances of but a single tumor being induced in the course of an experiment. Such a finding on its own may have little meaning particularly in the absence of controls; on the other hand it may be meaningful when considered with other data.

This work was undertaken in the years 1958–61 at the former Division of Oncology, the Chicago Medical School. Editing and publication of this volume was delayed for a number of years due to circumstances which are difficult to identify or explain, but which include personal move by both authors and personnel changes within NCI and at the Chicago Medical School. Responsibility for chronological continuation of this work has been assumed by Carcinogenesis Area, Etiology, NCI. The program provides for annual publication beginning with data for the current year (1969) and periodic publication of material covering the years 1961 through 1968 as rapidly as possible within the limitations of budget and personnel.

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A. INORGANIC COMPOUNDS

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
1. ALUMINUM								
Dworski, M., 1955	Guinea pigs			Exposed[1] for ½ hr. daily to atmosphere of avg. of 0.88 mg./cu. ft. of air.	Inhalation	0		At least 1 yr.
Dworski, M., 1955	Guinea pigs			Exposed[1] 8 hrs. a d. to avg. conc. of 1.57 mg./cu. ft. of air for 1 yr.	Inhalation	0		At least 1 yr.
Furuya, Y., Koshu Eiseiin	Rats		M	Powder[5395] 100 mg. susp. in water or alcohol.	I.P	0		7 mos.
Kenkyu Hokuku 7, 19–28 (1958).	Rats		M	Powder[5395] 50 mg. susp. in water or alcohol, or drug into incision.	Intratracheal	0		7 mos.
King, E. J., et al., 1958	26 rats	Black & white hooded.		95 mg.[2] of dust[3] and 5 mg. quartz dust[4]. Suspended in 1.5 ml. saline given once.	I.T. inj	0[5]	16 killed at monthly intervals, 10 died.	1 yr.
King, E. J., et al., 1958	12 rats	Black & white hooded.		100 mg.[2] of dust[3] suspended in 1.5 ml. saline given once.	I.T. inj	0[6]	10 killed at monthly intervals, 2 died.	1 yr.
Engelbrecht, F. M., et al., 1959.	6 rabbits	Mixed	F	0.5 g. powder in 4 ml. saline susp. 4 times at monthly intervals.	I.T. inj	0	1 killed at 180 d., 2 died between 300 & 400 d., 1 killed at 715 d.	715 d.
2. ALUMINUM HYDROXIDE								
Kay, S. & Thornton, J. L., 1955.	15 mice	Swiss	F	0.1, 0.2, 0.3, 0.4 or 0.5 cc. as a suspension in groups of 3 mice[7], one inj.	I.P	0	Killed at 2 or 4 mos.	4 mos.
Stacy, B. D., et al., 1959	24 rats	Black & white hooded.		14 & 50 mg. dust in 1.1 ml. saline once, 0.02μ in diameter.	I.T. inj	0[8]	Killed at monthly intervals.	1 yr.
Stacy, B. D., et al., 1959	12 rats	Black & white hooded.		60 mg. dust[9] in 1.1 ml. saline once, 3μ in diameter.	I.T. inj	0[8]	Killed at monthly intervals.	1 yr.

[1] Powdered compound designated as H–1010.
[2] 15% Al metal, 85% Al_2O_3, with 5% ignition loss.
[3] Size .05–1.0μ.
[4] Maximum size 5μ.
[5] 18 with pulmonary fibrosis.
[6] 10 with pulmonary fibrosis.
[7] As commercial preparation "Creamalin."
[8] Pulmonary fibrosis.
[9] Cera hydrate.
[5395] Particle size varied.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
3. ALUMINUM OXIDE (ALUMINA)								
Engelbrecht, F. M., et al., 1959.	4 rabbits	Mixed	M	300 mg.[10] in 3 ml. saline once, 15 mg.in 1 ml.saline 10 times in 4 wks.	I.T. inj. and I.V. injs.	0[8]	26% died in few d.	500 d.
Engelbrecht, F. M., et al., 1959.	11 rabbits	Mixed	M & F	500 mg. dust[10] in 4 ml. saline once, 25 mg. in 1 ml. saline 10 times in 4 wks.	I.T. inj. & I.V. injs.	0[8]	26% died in few d.	500 d.
Engelbrecht, F. M., et al., 1959.	40 guinea pigs.	Mixed	M & F	200 mg. dust[10] in 2 ml. saline once, 10 mg. in 0.5 ml. saline 10 times in 4 wks.	I.T. inj. & I.V. injs.	0[11]	17% died in few d.	Over 1 year.
Engelbrecht, F. M., et al., 1959.	40 rats	Black & white	M	100 mg. dust[10] in 1 ml. saline once	I.T. inj	0[8]	33% died in few d.	Over 1 yr.
Engelbrecht, F. M., et al., 1959.	40 mice	Albino	F	15 mg. dust[10] in 0.25 ml. saline once, 2 mg. in 0.35 ml. saline 4 times in 4 wks.	I.T. inj. & I.V. injs.	0[12]	33% died in few d.	Over 1 yr.
Engelbrecht, F. M., et al., 1959.	6 rabbits	Mixed	F	0.5 g. dust[10] in 4 ml. saline susp. 4 times at monthly intervals.	I.T. inj	0[8]	Killed at 60, 85, 365 & 665 d., 2 died at 405 & 595 respectively.	665 d.
Stacy, B. D., et al., 1959	12 rats	Black & white hooded.		50 mg. dust in 1.1 ml. saline once, 0.02μ in diameter.	I.T. inj	0[8]	Killed at monthly intervals.	1 yr.
Stacy, B. D., et al., 1959	12 rats	Black & white hooded.		50 mg. dust in 1.1 ml. saline once, $<1\mu$ in diameter.	I.T. inj	0[8]	Killed at monthly intervals.	1 yr.
Klosterkotter, W., 1960	30 mice	White		10 mg. suspended in 0.5 ml. tap water.	I.P	0[13]	6 died in 3 mos., 6 killed at 45, 90, 125 & 150 d.	150 d.
Klosterkotter, W., 1960	12 rats	White		50 mg. suspended in 1 ml. tap water	I.P	0[13]	Killed at 60, 180, 320 d.	320 d.
Klosterkotter, W., 1960	145 rats	White	F	1.6–3.8 mg. per lung, after 10 mos.—20.3–36.5 mg. per lung for max. of 285 d.	Inhalation	0[8]	15 killed at various times.	402 d.
Klosterkotter, W., 1960	18 rats	White		35 mg. suspended in 1 ml. tap water	I.T. inj	0[8]	Killed at 10, 150, 180 & 390 d. 1 died at 100 d.	390 d.
4. ALUMINUM PHOSPHATE								
Stacy, B. D., et al., 1959	30 rats	Black & white hooded.		50 mg. dust in 1.1 ml. saline once	I.T. inj	0[8]	Killed at monthly intervals.	1 yr.
5. AMMONIUM HYDROXIDE								
Rockhold, W. T., et al., 1957.	1 rabbit			0.01 ml. conc. soln. in one eye	In eye	0	100%	6 mos.

[8] Pulmonary fibrosis.
[10] Hydrated.
[11] Pulmonary fibrosis.
[12] Pulmonary fibrosis; hepatic lesions.
[13] Pulmonary fibrosis.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
6. ANTIMONY TRIOXIDE								
Gross, P., et al., 1955	Rats			2% of diet for 8 mos	P.O	0[14]		At least 9 mos.
Gross, P., et al., 1955	20 rats			2% of diet for duration of experiment.	P.O	0		Almost 240 d.
Gross, P., et al., 1955	7 rabbits			20 mg. at conc. of 2 mg./ml. saline once[15].	I.V	0	Killed at intervals.	12 mos.
Gross, P., et al., 1955	16 rabbits			20 mg. at conc. of 2 mg./ml. saline at 2 day intervals until total dosage of approx. 200 mg.[15]	I.V	0	Killed at intervals.	12 mos.
Gross, P., et al., 1955	10 rats			200 mg. in 1 ml. aqueous susp. once.	Intra-abdom. inj.	0	Killed at intervals beginning at 2 mos.	12 mos.
Gross, P., et al., 1955	10 rats			5.0 gms. suspended in 5 ml. water	P.O. (stomach tube).	0[14]		At least 30 d.
Gross, P., et al., 1955.	10 rats			2.5 gm. suspended in 5 ml. water	P.O. (stomach tube).	0[14]		At least 30 d.
Gross, P., et al., 1955 (B)	30 rats			Divided dose[16] in 1 ml. dist. water inj. I.T., the insufflation in multiple small doses twice a wk. Total dose of 50 mg.	I.T. inj., insufflation.	0	Killed at intervals.	1 yr.
Gross, P., et al., 1955 (B)	10 rats			Divided dose[16] in 1 ml. dist. water inj. I.T., then insufflation in multiple doses twice a wk. Total of 12 mg.	I.T. inj., insufflation.	0	Killed at intervals.	1 yr.
Gross, P., et al., 1955 (B)	20 rats			Divided dose[16] in 1 ml. dist. water inj. I.T. then insufflation in multiple small doses twice a wk. Total dose of 25 mg.	I.T. inj., insufflation.	0	Killed at intervals.	1 yr.
Gross, P., et al., 1955 (B)	9 rabbits			Total of 50 mg. dust[16], administered as susp. in dist. water by insufflation in multiple doses twice a wk.	I.T. inj., insufflation.	0	Killed at intervals.	1 yr.
Gross, P., et al., 1955 (B)	50 rats			100–125 mg./M.[16] suspended in water, blown into an inhalation chamber for 100 hrs./mo., for a period of 14.5 mos	Inhalation	0	9 spontaneous deaths.	14.5 mos.
Gross, P., et al., 1955 (B)	10 rabbits			Total of 150 mg. dust[16], administered as susp. in dist. water by insufflation in multiple doses twice a wk.	I.T. inj., insufflation.	0	Killed at intervals.	1 yr.
Gross, P., et al., 1955 (B)	10 rabbits			Total of 100 mg. dust[16], administered as susp. in dist. water by insufflation in multiple doses twice a wk.	I.T. inj., insufflation.	0	Killed at intervals.	1 yr.

[14] No pathology given.
[15] Average particle size 0.6μ.
[16] Vaporized in electric furnace at 1900° C., collecting only finest product for test.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
6. ANTIMONY TRIOXIDE (Continued)								
Gross, P., et al., 1955 (B)	10 rabbits			Desired dose[16] in 1 ml. dist. water, inj. I.T., then insufflation in multiple doses twice a wk. Total of 50.4 mg.	I.T. inj., insufflation.	0	Killed at intervals.	1 yr.
Gross, P., et al., 1955 (B)	20 rabbits			Desired dose[16] in 1 ml. dist. water, inj. I.T. then insufflation in multiple doses twice a wk. Total of 75.6 mg.	I.T. inj., insufflation.	0	Killed at intervals.	1 yr.
Gross, P., et al., 1955 (B)	30 rats			Total of 75–125 mg. dust[16], administered as susp. in dist. water.	I.T. inj	0	Killed at intervals.	1 yr.
Gross, P., et al., 1955 (B)	20 rabbits			89 mg./M.[16] susp. in water, blown into an inhalation chamber at rate of 100 hrs./mo., for a period of 10.0 mos.	Inhalation	0	17 spontaneous deaths.	10 mos.
7. ARSENIC (METAL)								
Hueper, 1954	20 rats	Osborne Mendel.	F	0.1 cc. of a 1% by weight lanolin susp.—3 injs. at 2 mo. intervals.	Nasal sinus, intra-nasal inj.	Tumors[17]	15 over 1 yr	
Hueper, 1954	25 rats	Osborne Mendel.	M & F	0.05 cc. of a 1% by weight lanolin susp., once a mo. for 6 mos.	Rt. plural cavity.	0[18]	14 more than 1 yr.	2 yrs.
Hueper, 1954	25 rats	Osborne Mendel.	M	0.2 cc. of a susp. in lanolin Ind. dose 0.43 mg. Twice, interval of 10 mos.	Bone marrow-cavity, 1 inj. l. femur, 1 inj. r. femur.	1[19]	12 died during 1st yr.	2 yrs.
Hueper, et al., 1954	6 rabbits	Dutch		0.3 cc. of a 1% by weight susp. in lanolin, once.	Bone marrow cavity, r. femur.	0	3 more than 2 yr.	4 yrs.
8. BARIUM CHROMATE								
Baetjer, A. M , et al., 1959	40 mice	A	F	0.99 mg. CrO_3 in 0.1 ml. of 1% saline susp. given 9 times at 4 to 6 wk. intervals.	I.V	0[20,21]	38 at end of experiment.	At least 54 wks.
Baetjer, A. M., et al., 1959	31 mice	A	F	0.1–0.2 mg. CrO_3 in 0.03 ml. of 1% saline susp. in olive oil given 5 times at 4 to 6 wk. intervals.	I.T. inj	0[22,23]	23 at end of experiment.	At least 52 wks.
Baetjer, A. M., et al., 1959	21 mice	A	M	0.1–0.2 mg. CrO_3 ml. of 1% saline susp. in olive oil given 5 times at 4 to 6 wk. intervals.	I.T. inj	0[24,25]	15 at end of treatment.	At least 52 wks.

[16] Vaporized in electric furnace at 1900°C., collecting only finest product for test.

[17] 4 mammary adenofibromas, 3 adrenal angiomas, 1 adrenocortical adenoma, 1 endometrial polyp, 2 basophilic pituitary adenomas, 2 hepatomas, 2 abdominal sarcomas. Suspicion of a causal relationship.

[18] 3 adenofibromas, 1 round cell sarcoma, considered spontaneous.

[19] Injection site spindle cell sarcoma (1 metastatic sarcoma), 1 ovarian teratoma, 1 pulmonary adenoma, considered spontaneous.

[20] 76.3% of survivors with pulmonary adenomas; 51.7% with multiple tumors (avg. 17 tumors/mouse).

[21] 63.3% of 45 barium sulfate controls with pulmonary adenomas; 47.4% with multiple tumors (avg. 1.8 tumors/mouse).

[22] 73.9% of survivors with pulmonary adenomas; 52.9% with multiple tumors (avg. 1.5 tumors/mouse).

[23] 68.2% of 30 barium sulfate in olive oil controls developed pulmonary adenomas; 40.0% with multiple tumors (avg. 1.6 tumors/mouse).

[24] 80.0% of survivors with pulmonary adenomas; 25.0% with multiple tumors (avg. 1.3 tumors/mouse).

[25] 77.8% of 19 barium sulfate in olive oil controls developed pulmonary adenomas; 71.4% with multiple tumors (avg. 2.0 tumors/mouse).

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
9. BARIUM SULFATE								
Cember, H. and Watson, J. A., 1958.	24 rats	CFW albino	F	26 μg. susp. once weekly for 10 wks	I.T. insufflation	0	9 died before 10 wks., 3 died at 117, 437, & 500 d. respectively.	570 d.
10. BARIUM SULFIDE								
Borum, K., 1958	35 mice	ST/Eh albino inbred.	M & F	Cream mixed with water applied for a few min.	Skin, interscapular region.	0[26]	Life	Up to 400 d.
11. BERYLLIUM (METAL)								
Hueper, 1954	20 rats	Wistar	F	10% by weight susp. in lanolin, 6 injs., each 0.05 cc. with 1 mo. interval.	R. plural cavity.	Tumors[27]	10 over 1 yr	2 yrs.
Hueper, 1954	20 rats	Wistar	F	10% by weight susp. in lanolin once, 0.05 cc.	R. femur	0[28]	13 over 1 yr	2 yrs.
12. BERYLLIUM CARBONATE								
Wentz, F. M., 1954	Rats			3, 6% in synthetic diet[29] for 14–168 d.	P.O	0[30]		At least 168 d.
13. BERYLLIUM OXIDE								
Masoero, A. and Lavarino, A., 1955.	6 guinea pigs			3 mg./Kg body weight, daily for 40 d.	S.C	0[31]	1 died at 30 d., 5 sacrificed at 40 d.	40 d.
Vorwald, A. J. and Reeves, A. L., 1959.	Rats	Albino		4.5 mg. of Be in 0.25 ml. saline thrice at wkly. intervals.	I.T. inj	Tumors[32]	Killed or died at various intervals.	At least 8 mos.
Vorwald, A. J. and Reeves, A. L., 1959.	Rats	Albino		0.048 mg. of particles/cu. m., 6 hrs./d., 5 d./wk.	Inhalation	Tumors[33]	Killed or died at various intervals	At least 365d.

[26] Epithelial hyperplasia and inflammatory reaction of corium and subcutis.
[27] 1 mediastinal round cell sarcoma, 1 spinal osteogenic fibrosarcoma attributed to Beryllium; 3 benign tumors in other rats considered spontaneous.
[28] 7 mammary adenofibromas, 1 adrenocortical adenoma, 2 mesenteric sarcomas, 1 teratoma. No tumors at injection site. Causal relationship not discussed.
[29] Supplemented with 300 u./100 g. or 2,670 u./100 g. Vitamin D in diet.
[30] Rachitic lesions in dental tissues.
[31] Toxicity study on kidney, liver, spleen, and lungs.
[32] Pulmonary epidermoid, squamous cell or adenomatous neoplasia at 8 mos.; prevalent metastases.
[33] Pulmonary epidermoid, squamous cell or adenomatous cancer at 9 mos.; prevalent metastases.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
14. BERYLLIUM SULFATE								
Schepers, G. W. H., et al., 1957.	7 rats	Albino-Sherman	F	1% soln. in dist. water to give mist, avg. conc. 12γ/cu. ft. of air, 8 hrs/d., 5 d./wk., 4 hrs. on Sat., for 30 d.	Inhalation	0	100%	30 d.
Schepers, G. W. H., et al., 1957.	7 rats	Albino-Sherman	F	1% soln. in dist. water to give mist, avg. conc. 12γ/cu. ft. of air for 8 hrs/d., 5 d./wk., 4 hrs. on Sat. for 1 wk. Then lived in normal air for 3 mos.	Inhalation	0		3 mos.
Schepers, G. W. H., et al., 1957.	7 rats	Albino-Sherman	F	1% soln. in dist. water to give mist, avg. conc. 12γ/cu. ft. of air for 8 hrs. Remained in chamber for 16 additional hrs.	Inhalation	0	4 killed, 3 lived in normal air for 3 mos.	3 mos.
Schepers, G. W. H., et al., 1957.	115 rats	88 Sherman, 27 Wistar (albino).	M & F	1% soln. in dist. water to give mist, avg. conc. of 12γ/cu. ft. of air 8 hrs/d., 5 d./wk., 4 hrs. on Sat., 6 mos. Then placed in normal air for 18 additional mos.	Inhalation	Tumors[34]	52 survived the 180 inhalation period[35]; 12 died during the remaining 18 mos., the rest were killed.	2 yrs.
Vorwald, A. J. and Reeves, A. L., 1959.	Rats	Albino		0.6427 mg. of mist./cu. m. 6 hrs./d., 5 d./wk.	Inhalation	Tumors[33]	Killed or died at various intervals.	At least 365 d.
Vorwald, A. J. and Reeves, A. L., 1959.	Rats	Albino		0.1071 mg. of Be in 0.25 ml. saline thrice at weekly intervals.	I.T. inj	Tumors[32]	Killed or died at various intervals.	At least 8 mos.
15. CADMIUM CHLORIDE								
Decker, L. E., et al., 1958	16 rats	Sprague Dawley Albino.	8 āā	50.0 ppm. in drinking water	P.O	0		91 d.
Decker, L. E., et al., 1958	16 rats	Sprague Dawley Albino.	8 āā	5.0 ppm. in drinking water	P.O	0		362 d.
Decker, L. E., et al., 1958	16 rats	Sprague Dawley albino.	8 āā	10.0 ppm. in drinking water	P.O	0		362 d.
Decker, L. E., et al., 1958	16 rats	Sprague Dawley albino.	8 āā	2.5 ppm. in drinking water.	P.O	0		362 d.
Decker, L. E., et al., 1958	16 rats	Sprague Dawley albino.	8 āā	0.5 ppm. in drinking water	P.O	0		362 d.
Decker, L. E., et al., 1958	16 rats	Sprague Dawley albino.	8 āā	0.1 ppm. in drinking water	P.O	0		362 d.

[32] Pulmonary epidermoid, squamous cell or adenomatous neoplasia at 8 mos.; prevalent metastases.

[33] Pulmonary epidermoid, squamous cell or adenomatous cancer at 9 mos.; prevalent metastases.

[34] 9 from groups exposed up to 30 days added to surviving rats and kept for additional 18 months in normal air.

[35] Pulmonary tumors: 18 adenomas; 5 squamous cell carcinomas, 1 with metastases; 24 acinous adenocarcinomas, 2 with metastases; 11 papillary adenocarcinomas, 1 with metastases; 7 alveolar-cell adenocarcinomas; 7 mucigenous tumors, 1 with metastases; 1 endothelioma; 3 retesarcomas, 3 with metastases. 5 tumors of the lymphatic system (macroscopic observation). 89 tumors seen macroscopically, 76 tumors listed which were located in midcoronal plane.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
16. CADMIUM OXIDE								
Forney, R. B., et al., 1955	Pigs			68 mg/lb. of food for 3 d., off 6 wks., 68 mg/lb. of food for 3 d.	P.O	0[14]	Sacrificed at 10 wks.	About 10 wks.
Forney, R. B., et al., 1955	Pigs			68 mg/lb. of food, 2.5 lbs. intake per d.	P O	0[14]	Killed at 14 & 30 d.	30 d.
Forney, R. B., et al., 1955	Pigs			91 mg/lb. of food, 2.5 lbs. intake per d.	P.O	0[14]	Killed at 1, 3, 7, 14, 60 & 90 d. intervals.	90 d.
17. CADMIUM SULFATE								
De Rosa, R., 1954	5 rabbits			1 mg. every second d	S.C	([36])	All alive at 70 d	Up to 100 d.
De Rosa, R., 1954	5 rabbits			0.5 mg. every second d	S.C	([36])	All alive at 70 d	Up to 100 d.
Dalhamn, T., and Friberg, L., 1955.	6 rabbits	Albino	M	0.5 ml. of 0.3% aqueous soln./kg. body wt. six d./wk. for 10 wks.	S.C	0[37]	3 died	10 wks.
Dalhamn, T., and Friberg, L., 1957.	18 rabbits		M	0.65 mg. cd./kg. bdy. wt. in water soln. 6 d./wk. up to 10 wks.	S.C	0[38]	After 2 wks. 2 killed every wk.	10 wks.
18. CALCIUM CHROMATE								
Payne, W. W., 1960	6 rats			12.5 mg. in gelatin capsule	Intrapleural Implant.	Tumors[39]	2 at 12 mos	12 mos.
Payne, W. W., 1960	6 rats			12.5 mg. in gelatin capsule	I.M. implant	Tumors[40]	4 at 12 mos	12 mos
Payne, W. W., 1960	52 mice	C 57 Black	26 F & 26 M	10 mg. dust/20 mg. sheep fat as cylindrical pellet.	I.M. Implant	Tumors[41,42]	29 at 12 mos	14 mos.
Payne, W. W., 1960	52 mice	C 57 Black	26 F & 26 M	10 mg. dust[44]/20 mg. sheep fat as cylindrical pellet.	I.M. Implant	Tumors[42,43]	30 at 12 mos	14 mos.
Payne, W. W., 1960	52 mice	C 57 Black	26 F & 26 M	10 mg. dust in 0.2 ml. tricaprylin	S.C. neck	Tumors[45,46]	12 at 12 mos	18 mos.
Payne, W. W., 1960	52 mice	C 57 Black	26 F & 26 M	10 mg. dust[44] in 0.2 ml. tricaprylin	S.C. neck	0	31 at 12 mos	18 mos.
19. CALCIUM FLUORIDE								
Carr, L. M., 1954	Rats[47]			200 ppm.[48] in riboflavin deficient diet for 5 wks.	P.O	0[14]		5 wks.

[14] No pathology given.
[36] Liver function study.
[37] Hepatic cirrhosis, nephrosis, and splenic fibrosis.
[38] Renal tubular damage.
[39] 3 sarcomas (1 spindle cell) at implant site at 7 months.
[40] 2 sarcomas (1 spindle cell) at implant site at 7 months.
[41] 1 spindle cell sarcoma at implant site at 9 months.
[42] 52 I. M. sheep fat implant controls negative.
[43] 9 sarcomas at implant site between 7 and 14 months.
[44] Sintered.
[45] 1 sarcoma at injection site after 13 months.
[46] 52 tricaprylin controls negative.
[47] Young.
[48] As calcium fluoride.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
20. CALCIUM SILICATE								
Gross, P., et al., 1957	14 rats			25 mg. of dust[49] 3 times about 1 wk. apart, total dose 75 mg.	I.T. inj	0	Some killed at 2 & 6 mos.	Up to 12 mos.
Gross, P., et al., 1957	16 rats			5 mg. of dust[49] once	I.T. inj	0	Some killed at 2 & 6 mos.	Up to 12 mos.
Gross, P., et al., 1957	40 rats			Avg. air flow 4M[3]/hr., 6 hrs./d., 5d./wk. for 15 mos.[49].	Inhalation	0	Killed from 9–24 mos. at intervals.	Up to 24 mos.
21. CALCIUM SILICATE, HYDROUS								
Schepers, G. W. H., et al., 1955.	20 rats			Avg. of 115,000,000 dust[50] particles/cu. ft. of air, 8 hrs./d., 5d./wk., and 4 hrs. on Sat. for a total of 18 mos.	Inhalation	0[51]	All survived 1 yr	18 mos.
Schepers, G. W. H., et al., 1955.	51 guinea pigs.			Avg. of 115,000,000 dust[50] particles/cu. ft. of air, 8 hrs./d., 5 d./wk. and 4 hrs. on Sat. for a total of 36 mos.	Inhalation	0[52]	46.5% died within 1 yr.	36 mos.
Schepers, G. W. H., et al., 1955.	10 hamsters			Avg. of 115,000,000 dust[50] particles/cu. ft. of air, 8 hrs./d., 5 d./wk., and 4 hrs. on Sat. for a total of 18 mos.	Inhalation	0[53]	All died within 1st yr.	18 mos.
22. CARBON (GRAPHITE)								
Lacassagne, A., et al., 1957	(3 mos.) 17 rats.	Wistar	12 M & 5 F	Plates 7×7×0.1 mm	S.C	0	16 at 2 yrs	2 yrs.
23. CERIUM								
Steffee, C. H., 1959	10 rats			As chloride, 60 mg./ml. 100 mg./kg. body wt.	I.P	0	7 between 2–47 d	Up to 47 d.
24. CHLORINE TRIFLUORIDE								
Horn, J. H., and Weir, R. J. 1956.	20 rats (avg. wt. 221 gm.).			Exposed to vapor at avg. conc. of 5.15 ppm., 6 hrs./d., 5 d./wk. for 6 wks.	Inhalation	0	1 early death (at 36 d.).	43 d.
Horn, H. J., and Weir, R. J., 1956.	20 rats			Avg. conc. of 1.17 ppm. 6 hrs./d., 5 d./wk., for 6 mos.	Inhalation	0[54]	6 died during 6 mos.	6 mos.
Horn, H. J. and Weir, R. J., 1956.	2 dogs			Avg. conc. of 1.17 ppm. 6 hrs./d., 5 d./wk. for 6 mos.	Inhalation	0[1272]	1 died on 115th d., other killed at end of experiment.	6 mos.

[3] Size .05–1.0μ.
[49] Particle size 0.03μ.
[50] Hydrous calcium silicate, 80%; Calcium carbonate, 5%; Magnesium silicate, 15%.
[51] Lymphoid hyperplasia developed from 6th month. Bronchial ulceration and peribronchiolitis.
[52] Lymphoid hyperplasia, chronic bronchiolitis and bronchial ulceration developed from 2nd mo.
[53] Chronic bronchiolitis and bronchial ulceration developed from 3rd month until 18th month.
[54] Pulmonary edema and bronchopneumonia observed in deceased rats.
[1272] Death on day 115 with purulent bronchitis and pulmonary abscesses. 6 mo. survivor with alveolar hemorrhage and enteric edema.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
25. CHROMIC CHLORIDE								
MacKenzie, R. D., et al., 1958.	21 rats	Sprague-Dawley albino.	9 F & 12 M	25 ppm. (of chromium) in drinking water for 1 yr.	P.O	0		1 yr.
26. CHROMIC PHOSPHATE								
Payne, W. W., 1960	52 mice	C57 Black	26 F & M	10 mg. dust (<10μ particle size) in 0.2 ml. tricapryllin once.[55]	S. C. neck	0		Up to 22 mos.
27. CHROMIUM								
Hueper, 1955 (B)	8 rabbits[66]	Dutch	M & F	0.4 cc. of a 35% susp. of powdered chromium in lanolin (30 mg. of chromium). After 30 mos., 4 survivors reinj. with twice the orig. dose.	Inj. into r. femoral cavity.	2[57]	4 at 26 mos	Last died at 58 mos.
Hueper, 1955 (B)	25 rats[58]	Wistar	M	0.2 cc. of 50% susp. of powdered chromium in a 20% gelatin-saline soln.	Inj. into r. femoral cavity.	Tumors[59]	19 at 13 mos	24 mos.
Hueper, 1955 (B)	25 rats	Osborn-Mendel	17 F, 8 M	6 monthly doses of 0.05 cc. of a 33.6% susp. of powdered chromium in lanolin.	Inj. into pleural cavity.	3[60,61]	14 at 13 mos	24 mos.
Hueper, 1955 (B)	25 rats	Wistar	M	6 wkly. doses of 0.1 cc. of a 0.5% susp. of powdered chromium in a 2.5% gelatin-saline soln.	Inj. into pleural cavity.	5[62,63]	22 at 16 mos	30 mos.
Hueper, 1955 (B)	25 rats	Wistar	M	6 wkly. doses of 0.18 cc. of 0.05% susp. of powdered chromium in a 2.5% gelatin-saline soln.	I.V., 1. vena saphena	7[64,66]	15 at 13 mos	24 mos.
Hueper, 1955 (B)	20 rats	Wistar	F	2 monthly doses of 0.1 cc. of a 33.6% chromium susp. in lanolin.	Inj. into r. paranasal sinus.	8[66,67]	16 at 13 mos	24 mos.
Hueper, 1955 (B)	25 rats	Wistar	M	6 wkly. doses of 0.1 cc. of 0.05% chromium susp. in a 2.5% gelatin-saline soln.	I.P	5[68,69]	14 at 13 mos	24 mos.

[66] Total 2.64 mg. chromium.

[56] Age at start: 3 mos.

[57] 1 at site of injection; 1 with endometrial papillary cystic adenoma; 1 vaginal hemangioma; 1 pleural fibrolipoma. Causal relationship to chromium for all tumors unlikely.

[58] Age at start: 5 mos.

[59] 1 spindle cell sarcoma; 1 cellular fibroma; 1 spindle cell sarcoma originating from hepatic mass extending into mesentery, stomach wall, and heart; 2 round cell sarcomas originating in ileocecal lymph nodes; 1 adreno-medullary hemangioma; 1 pancreatic insuloma. In identical control experiment using only gelatin, 4/30 animals developed tumors. Causal relationship to chromium unlikely except for spindle cell sarcomas and insuloma.

[60] All had adenofibromas attached to thoracic wall. 1 also had hemangioma (possible causal relationship).

[61] Causal relationship to the chromium unlikely, except for the hemangioma. In identical control experiment, using only lanolin, 8/25 developed tumors.

[62] 1 angiosarcoma; 1 fibrosing hemangioma (possible causal relationship); 1 round cell sarcoma originating from ileocecal lymph nodes; 1 large pituitary adenoma; 1 adreno-medullary angioma.

[63] Causal relationship to chromium unlikely except for hemangioma. In identical control experiment using only saline, 4/12 developed tumors.

[64] 4 with ileo-cecal round cell sarcomas with secondary extensions; 1 with adreno-medullary hemangioma; 2 with pulmonary papillary adenomas.

[65] Possible causal relationship between papillary adenomas and chromium. Causal relationship for other tumors unlikely.

[66] 1 with adenofibroma and adreno-medullary hemangioma; 5 with adreno-medullary hemangiomas; 1 with ileo-cecal round cell sarcoma, metastases to lymph nodes; 1 with basophilic adenoma.

[67] In identical control experiment using lanolin 9 tumors developed. Causal relationship questionable.

[68] 2 with multiple round cell sarcomas; 1 cecal scirrhus carcinoma; 1 invasive round cell sarcoma; 1 pancreatic insuloma in same animal; 1 with insuloma.

[69] Possible causal relationship to chromium in 4 of above tumors (cecum, foreleg, and 2 pancreas). Causal relationship for other tumors unlikely.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
27. CHROMIUM (Continued)								
Hueper, 1955 (B)	50 mice[70]	C57BL	M	4 wkly. doses of 0.2 cc. of 0.005% susp. of chromium in a 2.5% gelatin-saline soln.	I.P	1[71]	40 at 6 mos	21 mos.
Hueper, 1955 (B)	25 mice[70]	C57BL	M	2 doses, 2 wks. apart, of 0.2 cc. of 0.005% susp. of chromium in 2.5% gelatin-saline soln. Entire procedure repeated 3 wks. later.	Muscle tissue, r. thigh.	0	15 at 6 mos	13 mos.
Hueper, 1955 (B)	50 mice[70]	C57BL	M	0.2 cc. of 0.005% chromium susp. in a 2.5% gelatin-saline soln.; 6 times at 2-wk. intervals.	Inj. into r. pleural cavity.	0	32 at 7 mos	14 mos.
Hueper, 1955 (B)	26 guinea pigs[56].			6 monthly doses of 0.2 cc. of 33.6% susp. of chromium in lanolin.	Inj. into r. pleural cavity.	0	9 at 19 mos	36 mos.
Hueper, 1955 (B)	25 mice	C57BL		6 wkly. doses of 0.05 cc. of 0.005% susp. of chromium in a 2.5% gelatin-saline soln.	I.V., tail vein	0	19 at 7 mos	18 mos.
Hueper, 1955 (B)	8 rabbits	Albino		6 wkly. doses of 0.5 cc./kg. body wt. of 5% susp. of powdered chromium in 2.5% gelatin-saline soln. Course of treatment repeated after 4 mos. and again after 3 yrs.	I.V., ear vein	1[72]	5 dead before 3 yrs.	3½ yrs.[73]
Hueper, 1955 (B)	25 rats[58]	Obsorn-Mendel	M	0.2 cc. of a 50% susp. of powdered chromium in lanolin (about 45 mg. of chromium).	Inj. into marrow cavity of the r. femur.	2[74,75]	14 at 13 mos.	24 mos.
28. CHROMIUM TRIOXIDE								
Payne, W. W., 1960	52 mice	C57 Black	26 F & 26 M	10 mg. dust in 0.2 ml. tricaprylin	S. C. neck	0	40 at 12 mos	18 mos.
29. COBALT								
Heath, J. C., 1954	20 rats	Hooded	M & F	400 mesh powder with fowl serum, 0.028 gm. in 0.4 ml. serum—1 inj.	I.M	5[76]		Over 7 mos.
Delahant, A. B., 1955	6 guinea pigs			2, 5 mgs. doses of dust susp. in isotonic saline by rubber policeman, diluted to 10% susp.[77]; inj. a wk. apart.	I.T. inj	0[78]	1 survived 1 yr., 5 died within 11 d.	360 d.
Delahant, A. B., 1955	6 guinea pigs			One 25 mg. dose of dust susp. in isotonic saline by rubber policeman, diluted to 10% susp.[77]	I.T. inj	0[79]	2 survived 240 d. or more after inj.	360 d.

[70] Age at start: approximately 6 weeks.
[71] 1 myeloid leukemia (causal relationship unlikely).
[72] 1 with multiple immature carcinomatous masses; undetermined tissue of origin.
[73] Experiment incomplete at 3½ years (2 survivors under observation).
[74] 1 fibroma at injection site; 1 adrenocortical adenoma. Causal relationship to chromium doubtful.
[75] In identical control experiment, using only lanolin, 4/25 developed tumors.
[76] 3 histologically diagnosed rhabdomyosarcomas; 2 diagnosed grossly, still growing.
[77] Sterilized at 100° C. for 1 hour.
[78] No reaction.
[79] 1 with pleural adhesions.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
29. COBALT (Continued)								
Delahant, A. B., 1955	6 guinea pigs			One 50 mg. dose of dust susp. in isotonic saline by rubber policeman, diluted to 10% susp.[78]	I.T. inj	0[80]	3 died within 48 hrs., 1 killed at 8 mos., 2 survived 1 yr. after inj.	1 yr.
Schepers, G. W. H., 1955	Guinea pigs			One 50 mg. dose of dust susp. in isotonic saline by rubber policeman, diluted to 10% susp.[77]	I.T. inj	0		At least 12 mos.
Schepers, G. W. H., 1955	Guinea pigs			Two 5 mg. doses of dust susp. in isotonic saline by rubber policeman, diluted to 10% susp.[77], inj. 1 wk. apart.	I.T. inj	0		12 mos.
Schepers, G. W. H., 1955	Guinea pigs			One 25 mg. dose of dust susp. in isotonic saline by rubber policeman, diluted to 10% susp.[77]	I.T. inj	0		At least 8 mos.
Heath, J. C., 1956	20 rats	Hooded	10 M, 10 F	Susp. of 0.028 gm. powdered cobalt in 0.4 ml. fowl serum.	I.M., l. thigh	9[81]	11 alive at 50 wks.	122 wks.
Heath, J. C., 1956	10 rats	Hooded	F	Susp. of 0.028 gm. powdered cobalt in 0.4 ml. fowl serum.	I.M., r. thigh	8[82]	6 killed before 50 wks.	105 wks.
Kaplun, Z. S., Urachebure Delo Suppl., 103–4 (1957).	Rats			200 mg. per cu. m. dust in air 12 hrs. every other d. for 4 mos.	Inhalation	0		At least 4 mos.
Kaplun, Z. S., Urachebure Delo Suppl., 103–4 (1957).	Rats			3–10 mg. susp. in saline	Intratracheal	0		At least 8 mos.
Stokinger, H. E., and Wagner, W. D., 1958.	12 rabbits	Albino	M	1.5 mg./m.[3] of fumes 6 hrs./d. & intermittent every 3rd wk., for 24 wks.	Inhalation	0[83]		24 wks.
Stokinger, H. E., and Wagner, W. D., 1958.	6 rabbits	Albino	M	5 mg./m.[3] as metal and carbide blend 6 hrs./d. alternating 3 wks. for 30 wks.	Inhalation	([84])		30 wks.
Heath, J. C., 1960	30 rats	Hooded	M	0.028 g. powder in susp. with 0.4 ml. fowl serum.	I.M., r. thigh	Tumors[85]	Killed at fortnightly intervals.	At least 20 wks.
30. COBALT CHLORIDE								
Hopps, H. C., et al., 1954	Rats[86]	Sprague-Dawley.		0.4% aqueous soln. 6 times wkly., receiving from 2.5 mg.–10 mg./kg. body wt.	S.C	0[87]	All lived	At least 32 wks.
Guillet, G., 1957	Rats, adult	Wistar	M	2 mg. daily	I.P	0		90 d.

[3] Size .05–1.0μ.
[77] Sterilized at 100° C. for 1 hour.
[78] No reaction.
[80] 1 with pleural adhesions and pulmonary dust lesions.
[81] 5 rhabdomyofibrosarcomas (1 with lymph node metastases); 3 fibrosarcomas; 1 round cell sarcoma (all at injection site).
[82] 5 rhabdomyofibrosarcomas; 2 sarcomas; 1 fibrosarcoma (all at injection site).
[83] Lung pathology and biochemistry only.
[84] Biochemical study.
[85] Sarcomas at injection site.
[86] 4–5 months old.
[87] Animal receiving largest (10 mg./kg.) dose for 32 weeks developed polycythemia. No parenchymal organ changes as evidence of toxicity.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
30. COBALT CHLORIDE (Continued)								
Stokinger, H. E., and Wagner, W. D., 1958.	5 rabbits	Albino		5 mg./kg. alternate d. & alternate wks., for 20 wks.	Inj	[84]		20 wks.
Stokinger, H. E., and Wagner, W. D., 1958.	2 dogs	Mongrel		5 mg./kg. alternate d. & alternate wks., for 20 wks.	Inj	[84]		20 wks.
31. COBALTIC OXIDE								
Delahant, A. B., 1955	6 guinea pigs			150 mg. dust susp. in isotonic saline in 10% susp.[77] in 3 equal quantities at wkly intervals.	I.T. inj	0[88]	2 survived more than 200 d. after last inj.	At least 360 d.
Schepers, G. W. H., 1955	Guinea pigs			150 mg. dust susp. in isotonic saline in 10% susp.[77] in 3 equal quantities at wkly. intervals.	I.T. inj	0[89]		At least 12 mos.
32. COPPER SULFATE								
Gubler, C. J., et al., 1954	20 rats	Sprague-Dawley.	M	0.1% three times wkly	I.P	0	10 sacrificed on the 86th d.	120 d.
33. DECABORANE								
Svirbely, J. L., 1954	10 rats	CFW	M	20 ppm. of air, 6 hrs. per d., 5 d. per wk.	Inhalation	0	Sacrificed at intervals.	64 d.
Svirbely, J. L., and Roberts, J. C., Jr., 1956.	43 rats	CFW	M	Avg. conc.[90] 4.5 ppm. for 5½–6 hrs./d., 5 d./wk. for 6 mos.	Inhalation	0	33 killed at intervals up to 15th wk.	7 mos.
Svirbely, J. L., and Roberts, J. C., Jr., 1956.	20 mice	CFW	M	Avg. conc.[90] 4.5 ppm. for 5½–6 hrs./d., 5 d./wk. for 20 wks.	Inhalation	0[91]	18 died by 10th wk.	20 wks.
Friede, R. L., 1959	15 rats	Sprague-Dawley.	M	0.05, 0.025 and 0.01 cc. on subsequent d. for 4 wks., total 0.575 cc.[92].	Skin	0		4 wks. 18 d.
34. FERROUS SULFATE								
Haddow, A., and Horning, E. S., 1960.	20 mice	Stock		2.5 mg. wkly. for 16 wks	S.C	Tumors[93]	13 at 14 mos	14 mos. to date.
35. GLASS, POWDERED								
Oppenheimer, B. S., et al., 1953.	Rats			Embedded under skin	S.C	Tumors[94]		1–2 yrs.
Druckrey, H., and Schmahl, D., 1954.	63 rats	BD		500 mg	S.C. & I.P. implanted.	0		800 d.

[77] Sterilized at 100° C. for 1 hour.
[84] Biochemical study.
[88] Pigmented lesions of lungs.
[89] Focal and peribronchial, subacute, inflammatory reaction; subsided by end of 1 year.
[90] Air mixture approximately 98% pure.
[91] Autolysis: no histopathology.
[92] $B_{10}H_{14}I$. High energy fuel, HEF–3.
[93] 1 fibroma.
[94] 1/50 with malignant tumor.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
36. GOLD								
Nothdurft, H., 1955	Rats	Wistar		17×0.02 mm fine discs, 6 under skin of back, 4 I.P., 2 under skin of abdomen.	Implanted	9 sarcomas		
Nothdurft, H., 1955	Mice			Discs 12×0.02 mm, 6 under skin of back, 4 I.P., 2 under abdominal skin.	Implanted	3 sarcomas		
Nothdurft, H., 1956	77 rats			17 mm. disc implanted (8 per animal).	S.C	68 sarcomas		23 mos.
Nothdurft, H., 1958	31 rats	Wistar	F & M	Fragments 1×1×0.02 mm	S.C	0	19 at 18th mo	At least 29 mos.
37. HYDRAZINE								
Comstock, C. C., et al., 1954	10 guinea pigs			14 ppm. 6 hrs. per d., 5 d. per wk.	Inhalation	0	8 died	At least 70 d.
Comstock, C. C., et al., 1954	30 rats	Wistar	M	14 ppm. 6 hrs. per d., 5 d. per wk.	Inhalation	0	23 died	6 mos.
Comstock, C. C., et al., 1954	3 dogs	Beagle	M	14 ppm. 6 hrs. per d., 5 d. per wk. up to 194 exposures.	Inhalation	0	1 died at 15 wks	At least 6 mos.
Comstock, C. C., et al., 1954	Rats	Wistar	M	5 ppm. 6 hrs. per d., 5 d. per wk. up to 6 mos.	Inhalation	0	2 died at 28 wks	6 mos.
Comstock, C. C., et al., 1954	2 dogs	Beagles	M	5 ppm. 6 hrs. per d., 5 d. per wk. up to 6 mos.	Inhalation	0		6 mos.
Weatherby, J. H., and Yard, A. S., 1955.	10 rats	Albino	M	0.2 mg./ml. of drinking water for 14 wks.	P.O	0	8 alive at 6 wks	14 wks.
Weatherby, J. H., and Yard, A. S., 1955.	10 rats	Albino	M	0.5 mg./ml. of drinking water for 4 wks.	P.O	0	3 alive at 5 wks	14 wks.
Weatherby, J. H., and Yard, A. S., 1955.	10 rats	Albino	M	1 mg./ml. of drinking water for 3 wks.	P.O	0	5 killed, 1 died after 3 wks.	14 wks.
Weatherby, J. H., and Yard, A. S., 1955.	10 rats	Albino	M	2 mg./ml. of drinking water for 4 wks.	P.O	0	5 sacrificed at 4 wks.	14 wks.
Weatherby, J. H., and Yard, A S , 1955.	10 rats	Albino	M	0.1 mg./ml. of drinking water for 14 wks.	P.O	0	7 alive at 7 wks	14 wks
Weatherby, J. H., and Yard, A. S. 1955.	8 guinea pigs		M	3–8 mg. of vapor/m.[3] of atmosphere, exposure 6 hr./d., 5 d./wk. for 47 d. exposure[95].	Inhalation	0	2 died before 69 d.	69 d.
38. HYDROGEN PEROXIDE								
Oberst, F. W., et al., 1954	8 rabbits	Black		22 ppm. 6 hrs. per d., 5 d. per wk. for 3 mos.	Inhalation	0		3 mos.
Oberst, F. W., et al., 1954	2 dogs			7 ppm. vapor 6 hrs. per d., 5 d. per wk. for 6 mos.	Inhalation	0	Both survived	6 mos.

[3] Size .05–1.0μ.

[95] mg. per m.[3]: 3–6 for 10 days, then 4–8.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
38. HYDROGEN PEROXIDE (Continued)								
Oberst, F. W., et al., 1954	23 rats			67 ppm. vapor 6 hrs. per d., 5 d. per wk., for 6 wks.	Inhalation	0	1 died during study.	6 wks.
Oberst, F. W., et al., 1954	20 mice			57 or 77 ppm. vapor 6 hrs. per d., 5 d. per wk. for 6 wks.	Inhalation	0	15 died during study.	6 wks.
Nakahara, W., and Fukuoka, F., 1959.	Mice	Mixed		0.1 cc. of 0.5% in physiological salt soln. thrice wkly. for life.	S. C. r. inguinal region.	0[96]	5 at 200 d	302 d.
39. IRON								
Haddow, A., and Horning, E. S., 1960.	20 mice	CBA		0.2 cc. wkly. for 16 wks.[97]	S.C	0	19 at 15 mos	15 mos. to date.
Haddow, A., and Horning, E. S., 1960.	20 mice	CBA		20 mg. wkly. for 16 wks.[98]	S.C	0	16 at 15 mos	15 mos. to date.
40. IRON HYDROXIDE								
Stacy, B. D., et al., 1959	15 rats	Black & White hooded.		100 mg. dust in 1.1 ml. saline once, $<1\mu$ in diameter.	I.T. inj	0[8]	Killed at monthly intervals.	1 yr.
Stacy, B. D., et al., 1959	15 rats	Black & White hooded.		100 mg. dust in 1.1 ml. saline once, $<1\mu$ in diameter.	I.T. inj	0[8]	Killed at monthly intervals.	1 yr.
41. IRON OXIDE (ic)								
Muller, E., and Erhardt, 1956	15 mice	Albino		0.5 ml. of a 1% susp. in dist. water (total dose 5 mg.).[99]	I.P	0	4 at 5 mos., 6 at 3 mos.	5 mos.
42. IRON PHOSPHATE								
Stacy, B. D., et al., 1959	15 rats	Black & White hooded.		100 mg. dust in 1.1 ml. saline once	I.T. inj	0[8]	Killed at monthly intervals.	1 yr.
43. LANTHANUM								
Kyker, G. C., and Cress, E. A., 1957.	120 rats	Wistar	M & F	75, 150 & 300 mg./kg.[100] once	I.P	0[14]		6 mos.
Steffee, C. H., 1957	15 rats			As chloride, 60 mg./ml. 100 mg./kg. body wt.	I.P	0	8 died within 6 d., 7 between 14–41 d.	Up to 41 d.
44. LANTHANUM NITRATE								
Hartwig, Q. L., et al., 1958	10 rats	Sprague-Dawley.	M	450 mg./kg. body wt., dissolved in sterile dist. water.	I.P		2 died within 21 d.	30 d.

[8] Pulmonary fibrosis.
[14] No pathology given.
[96] Necrosis and suppuration at injection site.
[97] Dialyzed, 5% Fe_2O_3.
[98] Metallic sponge.
[99] Technical, precipitated: 90% under 1μ.
[100] 99% pure.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
45. LEAD ACETATE								
Pecora, L., et al., 1954	12 rabbits		M	2 ml. sol. 20% every second day	P.O	[101]		Up to 40 d.
46. MAGNESIUM								
McDonald, D. F., and Huffman, P. G., 1955.	17 rats[102]	Long-Evans	F	8 mg.–5 mm. strips	Bladder	0[103]		6 wks.
McDonald, D. F., and Huffman, P. G., 1955.	25 rats[102]	Long-Evans	F	8 mg.–5 mm. strips[104]	Bladder, I. M	0[105]		9 wks.
McDonald, D. F., and Huffman, P. G., 1955.	65 rats	Long-Evans	23 F & 42 M	8 mg.–5 mm. strips	Bladder	0[106]		9 wks.
McDonald, D. F., and Huffman, P. G., 1955.	16 rats	Long-Evans	F	Dose[104]	Bladder, I.M	0[103]		6 wks.
47. MANGANESE CHLORIDE								
Gubler, C. J., et al., 1954	20 rats	Sprague-Dawley.	M	4% three times wkly	I.P	0	10 sacrificed on the 86th d.	120 d.
Kuboyama, H., Fukuoka Igaku Zasshi *48*, 41–60 (1957).	Rats			1% aqueous soln., 2 cc. daily	Intradermal	0		135 d.
Kuboyama, H., Fukuoka Igaku Zasshi *48*, 41–60 (1957).	Rabbits			1% aqueous soln., 2 cc. daily	Intradermal	0		135 d.
48. MERCURIC CHLORIDE								
Granati, A., et al., 1957	8 rats	Albino	M	30 μg in water every second d	P.O. by tube	[101]		2 mos.
49. MERCURY								
Druckrey, et al., 1957	39 rats (3 mos. old).	BD III, BD IV	M & F	2×0.05 ml. at 14 d. interval, total dose: 0.1 ml.	I.P	5 spindle cell sarcoma in peritoneum at 22 mos.	Half life 800 d., 12 at 22 mos.	2 yrs.
Druckrey, H., et al., 1957	39 rats (3 mos. old).	BD III, BD IV	M & F	0.05 ml. once a wk. for two wks., total—.1 ml.	I.P	Tumors[107]	12 at the 22nd mo.	Life span avg. 580 d.
50. MICA								
Lacassagne, A., et al., 1957	Rats—17 (2.5 mos.).	Wistar	12 M & 5 F	Plates 7×7 mm.×0.1 mm	S.C	0	12 at 12 mos	2 yrs.

[101] Serum protein study only.
[102] Spayed.
[103] 94% with urinary cystic calculi.
[104] Also 10 mg. testosterone cyclopentyl propionate in cottonseed oil per week.
[105] 100% with urinary cystic calculi.
[106] 54 (100%) with urinary cystic calculi.
[107] 5 with abdominal spindle cell sarcomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
51. NEODYMIUM								
Steffee, C. H., 1957	10 rats			As chloride, 60 mg./ml. 100 mg./kg. body wt.	I.P	0	5 between 25–57 d.	Up to 57 d.
52. NICKEL								
Hueper, W. C., 1955 (A)	6 rabbits	Dutch		0.25 cc. of susp. in lanolin (12.5%/v and 43.8%/w), twice orig. dose given 27 mos. later.	Inj. into r. femoral cavity.	Tumors[108]	4 alive at 37 mos	48 mos.
Hueper, W. C., 1955 (A)	100 rats	Wistar	M & F	0.1 cc. of a 5% susp. in a 20% gelatin-saline soln. (about 50 mg. of powdered nickel).	Inj. into r. femoral cavity	Tumors[109]	62 alive at 16 wks	28 wks.
Hueper, 1955 (A)	25 mice[110]	C57BL	M	0.05 cc. of a 0.005% susp. in a 2.5% gelatin-saline soln., twice at a 2-wk. interval.	I.V. tail vein	0	19 alive at 13 mos	16 mos.
Hueper, W. C., 1955 (A)	25 rats	Wistar		0.5 cc./kg body wt. of 0.5% susp. in saline wkly for 6 wks.	I.V., vena saphena	Tumors[111]	6 alive at 13 mos	28 mos.
Hueper, 1955 (A)	10 rabbits[112]	Albino		0.5 cc./kg. body wt. of a 1% susp. in 25% gelatin-saline soln., wkly. for 6 wks.	I.V	0	5 alive at 19 wks	36 wks.
Hueper, 1955 (A)	50 mice[110]	C57BL		0 02 cc. of a 0.05% susp. in a 2.5% gelatin-saline soln.	I.M., r. thigh	0	26 alive at 13 mos	18 mos.
Hueper, 1955 (A)	50 mice[110]	C57BL	M	0.02 cc of a 0.06% susp. in a 2.5% gelatin-saline soln.	Inj. into r. pleural cavity.	0	37 alive at 13 mos	24 mos.
Hueper, W. C., 1958	100 rats	Wistar	50 F & M	15 mg. dust/m.[3] air, 6 hrs./d., 4 or 5 d./wk. up to 24 mos.[114]	Inhalation	0[113]	64 died by 12 mos	Up to 24 mos.
Hueper, W. C., 1958	60 rats	Bethesda Black.	F	15 mg. dust[114]/m.[3] air, 6 hrs./d., 4 or 5 d./wk. up to 18 mos.	Inhalation	0[113]	31 died by 12 mos	Up to 18 mos.
Hueper, W. C., 1958	20 mice	C57 Black	F	15 mg. dust[114]/m.[3] air, 6 hrs./d., 4 or 5 d./wk. up to 15 mos.	Inhalation	0[115]	17 died by 12 mos.	Up to 15 mos.
Hueper, W. C., 1958	42 guinea pigs	Strain 13	32 M & 10 F	15 mg. dust[114]/m.[3] air, 6 hrs./d., 4 or 5 d./wk. up to 21 mos.	Inhalation	Tumors[116]	19 died by 12 mos	Up to 21 mos.
53. NICKEL CHLORIDE								
Guillet, G., 1957	Adult rats	Wistar	M	2 mg	Daily I.P	0		90 d.

[3] Size .05–1.0μ.

[108] 1 endometrial adenoma; 1 femoral metastasizing endosteal fibrosarcoma.

[109] 27 with sarcoma at injection site (metastasis in 14); 2 with round cell sarcoma of ileo-cecal lymph nodes; 4 with mammary adenofibromas; 1 with mammary adenocarcinoma; 6 with adrenal hemangiomas; 4 with pituitary adenomas; 1 with myeloid leukemia; 1 with ovarian cystadenoma; 1 with pancreatic insuloma.

[110] Initial treatment: 6 weeks of age.

[111] 7 with sarcoma region of groin (metastasis in 1); 1 with mammary fibroadenoma; 2 with mammary adenomas; 3 with basophilic pituitary adenomas; 3 with adrenomedullary hemangiomas.

[112] Age at initial treatment: approximately 3 months.

[113] Benign hyperplastic adenomatoid pulmonary proliferations. Tumors considered unrelated.

[114] Metallic, 99% pure.

[115] 2 lymphosarcomas, considered unrelated.

[116] 1 pulmonary intra-alveolar carcinoma; 1 adenomatoid abdominal node—suspect origin: unobserved pulmonary tumor.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
54. NITRIC ACID								
Gray, E., et al., 1954	10 guinea pigs		M	4 hrs. daily, 5 d. per wk.—vapors[117,118].	Inhalation	0	Sacrificed at intervals.	6–7 mos.
Gray, E., et al., 1954	30 mice		M	4 hrs. daily, 5 d. per wk.—vapors[117,118].	Inhalation	0	Sacrificed at intervals.	6–7 mos.
Gray. E., et al., 1954	90 rats		M	4 hrs. daily, 5 d. per wk.—vapors[117,118].	Inhalation	0	Sacrificed at intervals.	6–7 mos.
55. NITROGEN DIOXIDE								
Mettier, S. R., Jr., et al., 1960.	3 rabbits		M	Avg. conc. 18 ppm., 4 hrs.,/d., 5 d./wk. for 34 d.	Inhalation	[14]		6 wks.
56. OZONE								
Stokinger, H. E., et al., 1956	Hamsters			1 ppm. at rate of 6 hrs./d. for 200 d	Inhalation	0	100%	200 d.
Stokinger, H. E., et al., 1956	10 rats[119]	Albino	M	1 exposure of 1 ppm. for 6 hrs. Six wks. later reexposed.	Inhalation	0	7 died when reexposed.	6 wks.
Stokinger, H. E., et al., 1956	25 rats			1.01 ppm. at rate of 6 hrs./d. for 200 d.	Inhalation	0	100%	200 d.
Stokinger, H. E., et al., 1956	10 rats			Preexposed to 1 ppm. of vapor for 150 hrs. Then on six (6) subsequent d. exposed to 1 ppm. of vapor 6 hrs./d.	Inhalation	0	1 died 6th d. of reexposure.	
Stokinger, H. E., et al., 1957	10 mice			Avg. 1.06 ppm. 6 hr./d., 5 d./wk. for 268 exposures.	Inhalation	0	7 died	433 d.
Stokinger, H. E., et al., 1957	12 rats			Avg. 1.06 ppm. 6 hrs./d., 5 d./wk. for 268 exposures.	Inhalation	0[120]	7 died	433 d.
Stokinger. H. E., et al., 1957	14 guinea pigs			Avg. 1.06 ppm. 6 hrs./d., 5 d./wk. for 268 exposures.	Inhalation	0[121]	10 died	433 d.
Stokinger, H. E., et al., 1957	4 dogs			Avg. 1.06 ppm. 6 hr./d., 5 d./wk. for 268 exposures.	Inhalation	0	100%	433 d.
Stokinger, H. E., et al., 1957	18 hamsters			Avg. 1.06 ppm. 6 hrs./d., 5 d./wk. for 268 exposures.	Inhalation	0[120]	2 died	433 d.
Svirbely, J. L., and Saltzman, B. E., 1957.	Rats	Adult Wistar	M	Conc. of 2, 3, or 7 ppm. for 4 hrs. Then reexposed 4½ wks. later to conc. of 10.4 ppm.	Inhalation	0[122]	All sacrificed	4½ wks.
Svirbely, J. L., and Saltzman, B. E., 1957.	Mice	Adult Swiss	M	Conc. of 2, 3, or 7 ppm. for 4 hrs. Then reexposed 4½ wks. later to conc. of 10.4 ppm.	Inhalation	0[122]	All sacrificed	4½ wks.
Mettier, S. R., Jr., et al., 1960.	3 rabbits		M	Avg. conc. 2.0 ppm., 4 hrs./d., 5 d./wk. for 25 d.	Inhalation	[14]		5 wks.

[14] No pathology given.
[117] Red fuming.
[118] Containing 8.0–17.0% NO_2.
[119] Adult.
[120] Pulmonary lesions.
[121] Lung lesions—untreated controls normal.
[122] Gross pulmonary hemorrhagic edema.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
57. PHOSPHORUS								
Buchanan, D. J., et al., 1954	Dogs		F	1 mg./kg./d. as a soln. in peanut oil, 5 mg. per cc.	S.C	0		Over 55 d.
58. PLATINUM								
Nothdurft, H., 1955	Rats	Wistar		Discs 17×0.02 mm., 6 under skin of back, 4 I.P., 2 under abdominal skin.	Implanted	7 sarc		
Nothdurft, H., 1955	Mice			Discs 12×0.02 mm., 6 under skin of back, 4 I.P., 2 under abdominal skin.	Implanted	6 sarc		
Nothdurft, H., 1956	69 rats			17 mm. disc implanted (8 per rat)	S.C	52 sarc		23 mos.
Nothdurft, H., 1958	31 rats	Wistar	F & M	Fragments 1×1×0.02 mm	S.C	0	20 at 18th mo	At least 29 mos.
59. POTASSIUM ARSENITE								
Salaman & Roe, 1956	14 mice	Albino "S" strain.		10 wkly applications of 1% soln. in methanol (total dose—30 mg.)[123].	Skin	3 (1 pap. each).	None died during course of treatment.	Approx. 30 wks.
60. POTASSIUM CHROMATE								
Mosinger, M., et al., 1954	3 rabbits			100 mg. every other d	P.O	0		4 mos.
MacKenzie, R. D., 1958	21 rats	Sprague Dawley albino.	9 F & 12 M	25 ppm (of chromium) in drinking water for 1 yr.	P.O	0		1 yr.
MacKenzie, R. D., et al., 1958.	80 rats[124]	Sprague Dawley albino.	40 M & 40 F	0.45, 2.2, 4.5, 7.7, & 11 ppm. of chromium in drinking water for 1 yr.	P.O	0		1 yr.
61. POTASSIUM CYANATE								
Berenblum, I., et al., 1959	20 mice	Swiss	M & F	2.5 mg. in saline once, 4 d. subsequent treated with twice-wkly. skin applications of 5% croton oil soln. in liquid paraffin for 40 wks.	I.P	Tumors[125,126]	All sacrificed at 40 wks.	40 wks.
62. POTASSIUM PERMANGANATE								
Hieger, I., 1959	50 mice	Stock		Unspecified[127]	S.C	0	24 at 12 mos., 1 at 24 mos.	At least 24 mos.

[123] Croton oil in acetone applications began 25 days post-treatment; 2 of 0.05% solution, 16 of 0.17% solution. (At first alternating at 3–4 day intervals with test substance.)
[124] 16 per group.
[125] 7/15 with papillomas, average 0.6±0.2 tumor/mouse.
[126] 46 croton oil controls with 11 papillomas; 2 pulmonary adenomas. Questionable carcinogenicity.
[127] Crude oxidation product of cholesterol.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
63. POTASSIUM SELENATE								
Rosenfeld & Beath, 1954	Rats[128]	Wistar	M & F	As 1.5, 2.5 or 7.5 ppm. selenum in drinking water.	P.O	0		1 yr.
64. POTASSIUM THIOCYANATE								
Telkka, A., and Kivalo, E., 1958.	10 rats	Sprague-Dawley albino.	M	50 mg./kg. daily in basal diet for 30 d.	P.O	0[129]	Sacrificed	30 d.
Field, J. B., et al., 1959	36 rats	Long-Evans	F	7.5 mg./d.+0.03 mg. thyroxin/d., fed low-iodine diet for over 18 mos.	P.O	0[130]		Up to 33 mos.
Field, J. B., et al., 1959	35 rats	Long-Evans	F	7.5 mg./d. in low-iodine diet for over 18 mos.	P.O	0[131]		Up to 33 mos.
65. POTASSIUM ZINC CHROMATE								
Baetjer, A. M., et al., 1959	29 mice	Swiss	F	0.02–0.06 mg. CrO_3 in 0.03 ml. of 0.2% saline susp. in olive oil given 4 times at 4 to 6 wk. intervals.	I.T. inj	0[132,133]	15 at end of treatment.	At least 52 wks.
Baetjer, A. M., et al., 1959	34 mice	Swiss	M	0.02–0.06 mg. CrO_3 ml. of 0.2% saline susp. in olive oil given 4 times at 4 to 6 wk. intervals.	I.T. inj	0[134,135]	26 at end of treatment.	At least 44 wks.
Baetjer, A. M., et al., 1959	12 mice	A	M	0.02–0.06 mg. CrO_3 in 0.03 ml. of 0.2% saline susp. in olive oil given 5 times at 4 to 6 wk. intervals.	I.T. inj	0[136,137]	6 at end of treatment.	At least 36 wks.
Baetjer, A. M., et al., 1959	31 mice	A	F	0.02–0.06 mg. CrO_3 in 0.03 ml. of 0.02% saline susp. in olive oil given 5 times at 4 to 6 wk. intervals.	I.T. inj	0[138,139]	15 at end of treatment.	At least 36 wks.
Baetjer, A. M., et al., 1959	27 mice	A	F	0.05 mg. CrO_3 in 0.1 ml. of 0.1% saline susp. given 10 times at 4 to 6 wk. intervals.	I.V	0[140,141]	20 at end of treatment.	At least 54 wks.

[128] Bred 5 times: reproduction study.
[129] Thyroid hyperplasia.
[130] 3 nodular thyroids.
[131] 4 nodular thyroids.
[132] 40.0% of survivors with pulmonary adenomas; 33.3% with multiple tumors; avg. 1.3 tumors/animal. Epithelization of alveoli.
[133] 38.9% of 29 controls (zinc carbonate in olive oil) developed pulmonary adenomas; 28.6% with multiple tumors; avg. 1.3 tumors/animal.
[134] 53.9% of survivors with pulmonary adenomas; 28.6% with multiple tumors; avg. 1.4 tumors/animal. Epithelization of alveoli.
[135] 46.2% of 25 controls (zinc carbonate in olive oil) developed pulmonary adenomas; 33.3% with multiple tumors; avg. 1.5 tumors/animal.
[136] 66.7% of survivors with pulmonary adenomas; 75% with multiple tumors; avg. 2.2 tumors/mouse. Epithelization of alveoli.
[137] 66.7% of 13 controls (zinc carbonate in olive oil) developed pulmonary adenomas; 50.0% with multiple tumors; avg. 1.5 tumors/mouse.
[138] 40.0% of survivors with pulmonary adenomas; 33.3% with multiple tumors; avg. 1.3 tumors/mouse. Epithelization of alveoli.
[139] 66.7% of 32 controls (zinc carbonate in olive oil) developed pulmonary adenomas; 33.3% with multiple tumors; avg. 1.5 tumors/mouse.
[140] 80.0% of survivors with pulmonary adenomas; 43.7% with multiple tumors; avg. 1.7 tumors/mouse.
[141] 63.6% of 27 controls (zinc carbonate) developed pulmonary adenomas; 28.6% with multiple tumors; avg. 1.4 tumors/mouse.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
66. SILICON DIOXIDE. INCLUDES CRISTOBALITE, LECHALETIERITE, QUARTZ, TRIDYMITE								
Druckrey, H., and Schmahl, D., 1954.	29 rats	BD		100 mg.[142]	S.C. & I.P. implanted.	Tumors[143]	20 at 393 d., first tumor.	
Marenghi and Lorenza, 1954	10 rats		M & F	Dust—14,000 particles/cc., 7 hrs. per d., 6 d. per wk.	Inhalation	0[144]	4 at 300 d	387 d.
Policard and Collet, 1954	Rats	Wistar		100, 50 or 30 mg./kg. in isotonic saline.	I.P. & I.T	0	Killed at intervals.	60 d.
Dworski, M., 1955	Guinea pigs			Total dose of 200 mg. susp. in isotonic saline, given 12 mos.[145]	I.P., I.T., or intra-vascular.	0[146]		12 mos.
Dworski, M., 1955	4 guinea pigs			800,000,000 particles[145]/cu. ft. of air for 6 mos.	Inhalation	0[146]	Sacrificed	6 mos.
King, E. J., et al., 1955	11 rats	HRC black and white.		50 mg. of dust (particle size 0.32–3.6μ) for 100 d.	I.T	0[5438]	5 at 300 d	Up to 365 d.
Grandjean, E., et al., 1956	12 rats	White		2.5 mg. dust[147] susp. in 0.01 cc. dist. water.	Intramesenteric inj.	0[148]	All sacrificed at 85 d.	85 d.
Grandjean, E., et al., 1956	Rats	White		2.5 mg. dust[147] susp. in 0.01 cc. dist. water.	Intramesenteric inj.	0[148]	All sacrificed at 85 d.	85 d.
Grandjean, E., et al., 1956	Rats	White		2.5 mg. dust[147] susp. in 0.01 cc. dist. water.	Intramesenteric inj.	0[148]	All sacrificed at 180 d.	180 d.
Grandjean, E., et al., 1956	Rats	White		2.5 mg. dust[147] susp. in 0.01 cc. dist. water.	Intramesenteric inj.	0[148]	All sacrificed at 74 d.	74 d.
Grandjean, E., et al., 1956	Rats	White		2.5 mg. dust[147] susp. in 0.01 cc. dist. water.	Intramesenteric inj.	0[148]	All sacrificed at 67 d.	67 d.
Grandjean, E., et al., 1956	Rats	White		2.5 mg. dust[147] susp. in 0.01 cc. dist. water.	Intramesenteric inj.	0[148]	All scarificed at 30 d.	30 d.
Grandjean, E., et al., 1956	15 rats	White		5 mg. dust[147] susp. in 0.02 cc. dist. water.	Intramesenteric inj.	0[148]	All sacrificed	55 d.
Grandjean, E., et al., 1956	15 rats	White		2.5 mg. dust[147] susp. in 0.01 cc. dist. water.	Intramesenterial inj.	0[148]	All sacrificed	55 d.
Grandjean, E., et al., 1956	15 rats	White		0.5 mg. dust[147] susp. in 0.01 cc. dist. water.	Intramesenterial inj.	0[148]	All sacrificed	55 d.
Grandjean, E., et al., 1956	30 rats	White		5.0 mg. dust[147] susp. in 0.02 cc. dist. water.	Intramesenterial inj.	0[148]	All sacrificed	85 d.
Grandjean, E., et al., 1956	30 rats	White		2.5 mg. dust[147] susp. in 0.01 cc. dist. water.	Intramesenterial inj.	0[148]	All sacrificed	85 d.
Grandjean, E., et al., 1956	30 rats	White		0.5 mg. dust[147] susp. in 0.01 cc. dist. water.	Intramesenterial inj.	0[148]	All sacrificed	85 d.

[142] Powdered quartz.
[143] 4 spindle cell sarcomas at implant site.
[144] Silicotic nodules induced.
[145] SiO_2 content 99.7%, size 1–3μ.
[146] Silicotic lesions.
[147] Maximum size 3μ, pure crystalline quartz.
[148] Intramesenteric fibrotic nodules.
[5438] Silicotic pulmonary fibrosis.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
66. SILICON DIOXIDE, INCLUDES CRISTOBALITE, LECHALETIERITE, QUARTZ, TRIDYMITE (Continued)								
Grandjean, E., et al., 1956	15 rats	White		50 mg. dust[147] susp. in 1 cc. dist. water.	I.T. inj	0[149]		160 d.
Grandjean, E., et al., 1956	45 rats	White		50 mg. dust[147] susp. in 1 cc. dist. water.	I.T. inj	0[150]	Killed at 2, 5, & 8 mos. intervals.	8 mos.
Grandjean, E., et al., 1956	15 rats	White		100 mg. dust[147] susp. in 1 cc. dist. water.	I.T. inj	0[151]		160 d.
Grandjean, E., et al., 1956	15 rats	White		50 mg. dust[147] susp. in 1 cc. dist. water.	I.T. inj	0[152]		160 d.
Grandjean, E., et al., 1956	15 rats	White		15 mg. dust[147] susp. in 1 cc. dist. water.	I.T. inj	0[153]		160 d.
Grandjean, E., et al., 1956	15 rats	White		50 mg. dust susp. in 1 cc. dist. water.[147]	I.T. inj	0[149]		160 d.
Grandjean, E., et al., 1956	15 rats	White		15 mg. dust[147] susp. in 1 cc. dist. water.	I.T. inj	0[149]		160 d.
Grandjean, E., et al., 1956	15 rats	White		5 mg. dust[147] susp. in 1 cc. dist. water.	I.T. inj	0[149]		160 d.
Grandjean, E., et al., 1956	15 rats	White		1.5 mg. dust[147] susp. in 1 cc. dist. water.	I.T. inj	0[149]		160 d.
Grandjean, E., et al., 1956	10 rats	White		15 mg. dust[147] susp. in 1 cc. dist. water.	I.P	0[154]		9 wks.
Grandjean, E., et al., 1956	10 rats	White		6.0 mg. dust[147] susp. in 1 cc. dist. water.	I.P	0[155]		9 wks.
Grandjean, E., et al., 1956	10 rats	White		2.0 mg. dust[147] susp. in 1 cc. dist. water.	I.P	0		9 wks.
Grandjean, E., et al., 1956	9 rats	White		0.5 mg. dust[147] susp. in 1 cc. dist. water.	I.P	0		9 wks.
Zaidi, S. H., et al., 1956	28 mice		M	15 mg. of flint dust[155] (2μ–4μ in size) susp. in saline soln. and given in 3 (0.5 ml) doses at wkly. intervals.	I.V. (tail vein)	0[157]	9 surviving at 181 d.	273 d.
Zaidi, S. H., et al., 1956	28 mice		M	7.5 mg. of flint dust[155] (1μ–2μ in size) susp. in 0.5 ml. saline soln. given in (1) dose.	I.V. (tail vein)	0[158]	4 surviving at 181 d.	225 d.
Zaidi, S. H., et al., 1956	28 mice		M	3.25 mg. of flint dust[155] (0.5μ–1μ in size) susp. in 0.5 ml. saline soln. given in (1) dose.	I.V. (tail vein)	0[159]	6 surviving at 181 d.	273 d.

[147] Maximum size 3μ, pure crystalline quartz.
[149] Silicotic pulmonary lesions.
[150] Fibrotic reaction increased over test period.
[151] Pulmonary fibrosis with silicotic nodules.
[152] Pulmonary fibrosis with silicotic nodules.
[153] Pulmonary silicotic nodules.
[154] 8 animals with abdominal fibrotic lesions.
[155] All animals with abdominal fibrotic lesions.
[156] Contained 99% SiO_2.
[157] Hepatic collagen fiber nodules at 180–273 days.
[158] Hepatic hyalinized collagen nodules at 210 days.
[159] Silicotic collagen nodules at 225 days.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
66. SILICON DIOXIDE, INCLUDES CRISTOBALITE, LECHALETIERITE, QUARTZ, TRIDYMITE (Continued)								
Zaidi, S. H., et al., 1956	28 mice		M	1.2 mg. of flint dust[156] (0.2μ–0.5μ in size) susp. in 0.5 ml. saline soln., given in (1) dose.	I.V. (tail vein)	0[160]	13 surviving at 121 d.	273 d.
Zaidi, S. H., et al., 1956	28 mice		M	0.6 mg. of flint dust[156] (<0.2μ in size) susp. in 0.5 ml. saline soln., given in (1) dose.	I.V. (tail vein)	0[161]	5 surviving at 180 d.	273 d.
Zaidi, S. H., et al., 1956	12 rats			300 mg. of flint dust[156] (2μ–4μ in size) susp. in saline soln. and given in 3 (1 ml.) doses at wkly. intervals.	I.T. inj	0[162]	2 surviving at 90 d.	140 d.
Zaidi, S. H., et al., 1956	12 rats			126 mg. of flint dust[156] (1μ–2μ in size) susp. in saline soln. and given in 2 (1 ml.) doses at a wk. interval.	I.T. inj	0[163]	9 surviving at 60 d.	90 d.
Zaidi, S. H., et al., 1956	12 rats			54 mg. of flint dust[156] (0.5μ–1μ in size) susp. in saline soln. and given in 2 (1 ml.) doses at a wks. interval.	I.T. inj	0[164]	2 surviving at 60 d.	140 d.
Zaidi, S. H., et al., 1956	12 rats			33 mg. of flint dust[156] (<0.5μ-in size) susp. in saline soln. and given in 2 (1 ml.) doses at a wks. interval.	I.T. inj	0[165]	5 surviving at 90 d. or more.	150 d.
Gross, P., et al, 1957	40 rats			Avg. air flow 4 M[3]/hr., 6 hrs./d., 5d./wk. for 15 mos.[166]	Inhalation	0[167]	Killed from 15–24 mos. at intervals.	24 mos.
Gross, P., et al., 1957	21 rats			1.4 mg. 6 times about 1 wk. apart, total dose 8.6 mg.[166]	I.T. inj	0[167]		Up to 2 yrs.
Gross, P., et al., 1957	12 rats			75 mg. of dust once[168]	I.T. inj	0[169]	Some killed at 2 & 6 mos.	Up to 12 mos.
Gross, P., et al., 1957	11 rats			40 mg. of dust[168] once	I.T. inj	0[169]	Some killed at 2 & 6 mos.	Up to 12 mos.
Sakabe, H., & Ono, T., 1957	Guinea pigs			100 mg.[170] susp. in 1 cc. saline, <3μ	I.P	0[171]	All sacrificed at 2 mos.	2 mos.
Sakabe, H., & Ono, T., 1957	Rats			100 mg.[170] susp. in 1 cc. saline.	I.P	0[171]	All sacrificed at 6 mos.	6 mos.
Schepers, G. W. H., et al., 1957.	6 rats			0.25 cc. of 5% susp. Thrice at wkly. intervals, total dose 37.5 mg.[172]	I.T. inj	0	3 died	Up to 250 d.

[3] Size .05–1.0μ.

[160] Hepatic collagen nodules at 120 plus days.
[161] Hepatic collagen nodules after 180 days. Splenic reticulinosis.
[162] Pulmonary collagen nodules at 88 days.
[163] Pulmonary collagen nodules.
[164] Pulmonary collagen nodules.
[165] Silicotic pulmonary collagen nodules after 90 days.
[166] Size 0.02μ.
[167] Silicotic pulmonary nodules after 1 year.
[168] Size 0.8μ.
[169] Silicotic pulmonary nodules.
[170] 99.7% pure.
[171] Silicotic omental nodules.
[172] Degussa submicron amorphous dust.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
66. SILICON DIOXIDE, INCLUDES CRISTOBALITE, LECHALETIERITE, QUARTZ, TRIDYMITE (Continued)								
Schepers, G. W. H., et al., 1957.	5 rabbits			5 cc. of 1% saline susp. biwkly. for 20 injs., total dose 1000 mg.[172]	I.V	0[173]	1 died at 4 d	Up to 300 d.
Schepers, G. W. H., et al., 1957.	7 rabbits			1.5 mg./cu. ft. air from 5–12 mos., normal air up to 1 yr.[172]	Inhalation	0	2 at 1 yr	24 mos.
Schepers, G. W. H., et al., 1957.	18 guinea pigs	Albino	M & F	1.5 mg./cu. ft. air for 1 yr., in normal air from 1–30 d.[172]	Inhalation	0		Up to 13 mos.
Schepers, G. W. H., et al., 1957.	18 guinea pigs	Albino	M & F	1.5 mg./cu. ft. air for 24 mos., normal air for 1 yr.[172]	Inhalation	0		Up to 36 mos.
Schepers, G. W. H., et al., 1957.	42 guinea pigs	Albino	M & F	1.5 mg./cu. ft. air from 60 d. to 24 mos.[172]	Inhalation	0	74% died during 1st yr.	Up to 24 mos.
Schepers, G. W. H., et al., 1957.	6 guinea pigs			0.5 cc. of 5% susp. thrice, total dose 75 mg.[172]	I.T. inj	0	Killed at intervals	Up to 365 d.
Zaidi, S. H., et al., 1957	30 mice	Swiss	M	5 mg./0.5 ml. of susp.[174]	I.V. (tail vein)	0[175]	9 died, others killed at intervals.	273 d.
Zaidi. S. H., et al., 1957	30 mice	Swiss	M	5 mg./0.5 ml. of susp.[176]	I.V. (tail vein)	0[177]	12 died, others killed at intervals.	225 d.
Zaidi, S. H., et al., 1957	30 mice	Swiss	M	5 mg./0.5 ml. of susp.[176]	I.V. (tail vein)	0[178]	10 died, others killed at intervals.	273 d.
Zaidi, S. H., et al., 1957	30 mice	Swiss	M	5 mg.[5398]/0.5 ml. of susp	I.V. (tail vein)	0[5399]	5 died, others killed at intervals.	273 d.
Englebrecht, F. M., et al., 1958.	26 rats	M.R.C. Black & White.	M	25 mg. of dust[179] 0.5–2μ in dia	I.T. inj	0[180]	25 killed at 20 d. intervals, 1 died at 120 d.	220 d.
Englebrecht, F. M., et al., 1958.	26 rats	M.R.C. Black & White	M	25 mg. of dust[179] 0.5–2μ in dia., etched with 10% HF.	I.T. inj	0[181]	20 killed at 20 d. intervals, 6 died.	220 d.
Englebrecht. F. M., et al., 1958.	26 rats	M.R.C. Black & White.	M	25 mg. of dust[179] 0.5–2μ in dia., etched with 10% NaOH.	I.T. inj	0[181]	23 killed at 20 d. intervals, 3 died.	220 d.
Englebrecht, F. M., et al., 1958.	26 rats	M.R.C. Black & White.	M	25 mg. of dust[182] 0.5–2μ in dia	I.T. inj	0[180]	25 killed at 20 d. intervals, 1 died at 140 d.	220 d.
Englebrecht, F. M., et al., 1958.	26 rats	M.R.C. Black & White.	M	25 mg. of dust[182] 0.5–2μ in dia., etched with 10% NaOH.	I.T. inj	0[183]	23 killed at 20 d. intervals, 1 died at 220 d.	220 d.

[172] Degussa submicron amorphous dust.
[173] Pulmonary and renal lesions noted.
[174] Fused, pure quartz crystals; 99.5% SiO_2; maximum size 3.6μ.
[175] Hepatic fibrosis.
[176] 99.5% SiO_2; maximum size 3.6μ.
[177] Hepatic collagen nodules at 225 days.
[178] Hepatic collagen fibrosis at 225 days.
[179] 99.6% silica.
[180] Pulmonary fibrosis at 120 days.
[181] Pulmonary fibrosis at 80 days.
[182] Vitreous, 98.3% pure.
[183] Pulmonary fibrosis at 140 days.
[5398] Contained 99.2% SiO_2; particle size less than 3.6 μ.
[5399] Hepatic fibrosis at 225 days.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
66. SILICON DIOXIDE, INCLUDES CRISTOBALITE, LECHALETIERITE, QUARTZ, TRIDYMITE (Continued)								
Englebrecht, F. M., et al., 1958.	26 rats	M.R.C. Black & White.	M	25 mg. of dust[184] 0.5–2μ in dia., etched with 10% H.F.	I.T. inj	0[185]	23 killed at 20 d. intervals, 3 died.	220 d.
Englebrecht, F. M., et al., 1958.	26 rats	M.R.C. Black & White.	M	25 mg. of dust[184] 0.5–2μ in dia	I.T. inj	0[185]	25 killed at 20 d. intervals, 1 died at 200 d.	220 d.
Englebrecht, F. M., et al., 1958.	26 rats	M.R.C., Black & White.	M	25 mg. of dust[184] 0.5–2μ in dia., etched with 10% NaOH.	I.T. inj	0[185]	25 killed at 20 d. intervals, 1 died at 220 d.	220 d.
Furuya, Y., Koshu Eiseiin Kenkyu Hokuku 7, 19–28 (1958).	Rats		M	Powder[5397], 50 mg. susp. in water	Intratracheal	0		9 mos.
Gross, P., et al., 1958	Rats			47 mg./cu. meter susp. in 1 ml. water for 1, 2, 3 & 4 mos.[186]	I.T. inj	0[169]	Killed at 1, 2, 3 & 4 mos.	4 mos.
Gross, P., et al., 1958	Rats			22 mg./cu. meter for 30 hrs./wk. for 1, 2, 3 & 4 mos.[187]	Inhalation	0[169]	2 killed at 1, 2, 3 & 4 mos.	4 mos.
Hueper, W. C., 1959	30 rats	Bethesda Black.		300 mg. powder once	I.P	Tumors[188, 189].	All survivors sacrificed.	2 yrs.
Hueper, W. C., 1959	45 rats	Bethesda Black.		300 mg. powder once	S.C	Tumors[189, 190].	All survivors sacrificed.	2 yrs.
Gross, P., et al., 1960	15 rats	Carworth Farms, White.	M	25 mg. of dust, 1, 2μ in particle size, susp. in 1 ml. water.	I.T. inj	0[169]	3 killed at 6 mos	1 yr.
Gross, P., et al., 1960	40 rats	Carworth Farms, White.	M	21.6 mg. dust/cu. m. 6 hrs/d., 5 d./wk. for 1 yr.	Inhalation	0[169]		2 yrs.
Gross, P., et al., 1960	15 guinea pigs			24.0 mg. dust/cu. m. 6 hrs./d., 5 d./wk. for 1 yr.	Inhalation	0[191]		2 yrs.
67. PRASEODYMIUM								
Steffee, C. H., 1959	10 rats			As chloride, 60 mg./ml. 100 mg./kg. body wt.	I.P	0	10 between 2–71 d.	Up to 71 d.

[169] Silicotic pulmonary nodules.
[184] 99.3% silica.
[185] Pulmonary fibrosis at 40 days.
[186] Silica dust; maximum size 4μ.
[187] Silica dust; maximum size 2μ.
[188] 2 hepatic reticulum cell sarcomas; 1 mammary adenofibroma; 3 uterine carcinomas.
[189] Of 200 controls: 11 with reticulum cell sarcomas; 1 with pulmonary adenoma; 3 with mammary adenofibromas; 1 with renal carcinoma; 4 with uterine carcinomas; 1 with ovarian carcinoma. Controls received different unstated treatments.
[190] 1 with lymph node reticulum cell sarcoma; 1 with hepatic cholangioma; 2 with hepatic reticulum cell sarcomas; 2 with pulmonary mesotheliomas; 1 with uterine carcinoma; 1 with ovarian cystadenoma.
[191] Lung pathology only.
[5397] Quartz.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
68. SILVER								
McDonald, D. F., and Huffman, P. G., 1955.	13 rats	Long Evans	M	Implanted	Bladder	0[192]		8 wks.
Nothdurft, H., 1955	Mice			Discs 12×0.02 mm, 6 under skin of the back, 4 I.P., 2 under abdominal skin.	Implanted	1 sarcoma		
Nothdurft, H., 1955	Rats	Wistar		Discs 17×0.02 mm, 6 under skin of back, 4 I.P., 2 under abdominal skin.	Implanted	5 sarcomas		
Nothdurft, H., 1956	84 rats			17 mm. disc implanted (8 per animal).	S.C	65 sarcomas		23 mos.
Oppenheimer, B. S., et al., 1956.	25 rats	Wistar	M	2 pieces of foil, 1.5 cm. wide	Imbedded, S.C., both sides of abdominal wall.	14 (32%) (fibrosarcomas at site of imbedding)[193].		At least 625 d.
Nothdurft, H., 1958	35 rats	Wistar	M & F	Fragments 1×1×0.02 mm	S.C	0	24 at 18th mo	At least 29 mos.
69. SILVER NITRATE								
O'Connor, R. J., 1954	Mice	White		Fused crystals	Colonic mucosa, thru anus.	0[194]	50% survived operation.	Up to 35 d.
70. SODIUM ARSENITE								
Shimkin, M. B., 1954	30 mice	A	F[195]	As Fowler's soln. diluted 1.10—(0.1 mgm. arsenite/0.1 cc. water) three doses on 3 consecutive d., repeated over 7 wks. to total of 1.2 mgms.	I.P		30 at 7 wks	
Boni, P., 1955	Rats			2.5 mg./kg. body wt., daily for 60 d	I.P	0[196]	60% were dead at 60th d.	60 d.
71. SODIUM BROMIDE								
Rosenblum, I., et al., 1960	4 dogs	Beagle	3 M & 1 F	128 mg./kg./d. in capsule in food.	P.O	0	100%	Over 1 yr.

[192] 54% with urinary cystic calculi.
[193] Latent periods 275–625 days.
[194] Induced necrosis; healing in 35 days.
[195] Virgin.
[196] Toxicity study.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
72. SODIUM CHLORIDE								
Meyer, J. M., and Weir, W. C., 1954.	40 sheep	Crossbred	F	0.5, 4.8, 9.1, or 13.0% mixed in pelleted basal diet, 253 d.	P.O	0		253 d.
Lusky, L. M., and Nelson, A. A., 1957.	30 rats	20 Osborne-Mandel 10 Bethesda Black.	20 M 10 F	1 cc. of 0.9% aqueous soln. wkly	S.C	0		73 wks.
Meneely, G. R., et al., 1957	30 rats	Sprague-Dawley.	M	9.8% in purified diet ad. lib	P.O	0[197]	Some died or sacrificed	Animals still alive over 9 mos.
Meneely, G. R., et al., 1957	30 rats	Sprague-Dawley.	M	8.4% in purified diet ad. lib	P.O	0[197]	Some died or sacrificed.	Animals still alive over 9 mos.
Meneely, G. R., et al., 1957	30 rats	Sprague-Dawley.	M	7.0% in purified diet ad. lib	P.O	0[197]	Some died or sacrificed.	Animals still alive over 9 mos.
Meneely, G. R., et al., 1957	30 rats	Sprague-Daw-	M	5.6% in purified diet ad. lib	P.O	0	Some died or sacrificed.	Animals still alive over 9 mos.
73. SODIUM FLUORIDE								
Peirce, A. W., 1954	16 sheep[198]	Merino	M	Mean of 33 mg. daily for 26 mos., 20 ppm.	P.O	0	1 died at 13 mos	26 mos.
Peirce, A. W., 1954	16 sheep[198]	Merino	M	Mean of 18 mg. daily for 26 mos., 10 ppm.	P.O	0	1 died at 17 mos.	26 mos.
Wadhwani, T. K., 1954	Rats	White		4 mg./d. dissolved in water for 10 wks.	P.O	0[199]		10 wks.
Wadhwani, T. K., 1954	Rats	White		2 mg./d. dissolved in water for 14 wks.	P.O	0[199]		14 wks.
Arizono, H., and Ichikawa, M., 1955.	Rats		M	1, 5, 10, 50 or 100 ppm. in 15–20 cc. of soln./d. in diet for 107 d.	P.O	0[200]	All sacrificed	107 d.
Arizono, H., and Ichikawa, M., 1955.	Rats		M	1, 5, 10, 50 or 100 ppm. in 15–20 cc. of soln./d. in diet for 192 d.	P.O	0[200]	All sacrificed	192 d.
Arizono, H., and Ichikawa, M., 1955.	Rats		M	1, 5, 10, 50 or 100 ppm. in 15–20 cc. of soln./d. in diet for 210 d.	P.O	0[200]	All sacrificed	210 d.
Takamori, T., 1955	Rabbits			30–140 mg./kg. body wt. as 5% susp., daily for 30–200 d.	P.O. (by tube)	0[201]	Sacrificed at intervals.	Up to 200 d.
Takamori, T., 1955	13 rabbits	White		50 mg./kg. body wt. daily	P.O	0[202]		
Takamori, T., 1955	10 rabbits	White		30 mg./kg. body wt. daily	P.O	0[202]		

[197] Renal lesions.
[198] Castrated.
[199] Alteration of bone composition.
[200] Calcium and alkaline phosphatase in bones and teeth.
[201] Bone study.
[202] Myocardial lesions.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
73. SODIUM FLUORIDE (Continued)								
Takamori, T., 1955	11 rabbits	White		10 mg./kg. body wt. daily	P.O	0[202]		
Takamori, T., 1955	30 rabbits			10–50 mg./kg. body wt. as 1, 3, or 5% soln. or susp. daily for 4–12 wks.	P.O. (by tube)	0[203]		Up to 12 wks.
Takamori, T., 1955	Rats			375, 100, 50, 10, 5 or 2 ppm.[204] mixed in standard diet.	P.O	0[205]		At least 6 wks.
Takamori, T., 1955	3 rabbits	White		100 mg./kg. body wt. daily	P.O	0[202]		
Toshima, H., and Yojiro, T., 1955.	1 dog	Japanese "Shiba".	M	20 mg./kg. (2% soln.)/d. for 146 d	P.O			At least 146 d.
Toshima, H., and Yojiro, T., 1955.	5 dogs	2 terriers, 1 pointer & 1 Japanese "Shiba".	3 M & 2 F	20% soln. 1 cc./kg./d. for 147–532 d.	I.V			147–532 d.
74. SODIUM NITRITE								
Nakahara, W., and Fukuoka, F., 1959.	Mice	Mixed		27.6 mg. in 4 cc. 1:1000 NHCl given in 0.2 cc. doses 9 times at 1 wk. intervals in 60 d.	S.C	0	8 at 200 d	341 d.
Nakahara, W., and Fukuoka, F., 1959.	Mice	Mixed		Total 12 mg. as 1% soln. in distilled water given in 0.1 cc. doses 12 times in 90 d.	S.C	0	9 at 200 d	342 d.
75. SODIUM SELENITE								
Halverson, A. W., et al., 1955.	6 rats[206]	Sprague-Dawley.	M	10 ppm., dissolved in 70% ethanold and sprinkled on variant diets for 42 d.	P.O	0[207]	17–100%	42 d.
76. SODIUM SILICOFLUORIDE								
Carr, L. M., 1954	Rats[47]			120 ppm. in riboflavin deficient diet for 5 wks.	P.O	0[14]		5 wks.
77. SODIUM ZIRCONIUM LACTATE								
Prior, J. T., et al., 1960	6 rabbits	Albino		Ca. conc. 0.049 mg./cc. mist for 20 min. daily for 6 wks.	Inhalation	Tumors[208]	100%	6 wks.

[14] No pathology given.
[47] Young.
[202] Myocardial lesions.
[203] Hematological study.
[204] Of fluorine.
[205] Bone study.
[206] Per group.
[207] Gross examination and weight of liver observed.
[208] 1 with peribronchial granuloma; 1 with lingual granuloma. 6 untreated controls normal.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experimen[4]
78. SULFURIC ACID								
Thomas, M. D., et al., 1958	6 guinea pigs			Avg. conc. 2.21 mg./m.[3] of coarse aersol for 45 d.	Inhalation	0	100%	45 d.
Thomas, M. D., et al., 1958	8 guinea pigs			Avg. conc. 2.60 mg./m.[3] of medium aerosol for 119 d.	Inhalation	0	4 killed accidently	119 d.
Thomas, M. D., et al., 1958	16 guinea pigs			Avg. conc. 2.10 mg./m.[3] of medium aersol for 130 d.	Inhalation	0		130 d.
Thomas, M. D., et al., 1958	9 guinea pigs			Avg. conc. 3.05 mg./m.[3] of medium aerosol for 45 d.	Inhalation	0	100%	45 d.
Thomas, M. D., et al., 1958	15 guinea pigs			Avg. conc. 1.15 mg./m.[3] of coarse aerosol for 139 d.	Inhalation	0		139 d.
Thomas, M. D., et al., 1958	9 guinea pigs			Avg. conc. 2.56 mg./m.[3] medium-coarse aerosol for 57 d.	Inhalation	0	3 killed accidently	57 d.
Thomas, M. D., et al., 1958	8 guinea pigs			Avg. conc. 2.06 mg./m.[3] of medium-coarse aerosol for 130 d.	Inhalation	0		130 d.
Thomas, M. D., et al., 1958	10 guinea pigs			Avg. conc. 21.20 mg./m.[3] of fine aerosol for 45 d.	Inhalation	0	100%	45 d.
Thomas, M. D., et al., 1958	8 guinea pigs			Avg. conc. 2.04 mg./m.[3] of fine aerosol for 130 d.	Inhalation	0		130 d.
Thomas, M. D., et al., 1958	10 guinea pigs			Avg. conc. 2.74 mg./m.[3] of fine aerosol for 140 d.	Inhalation	0		140 d.
Thomas, M. D., et al., 1958	15 guinea pigs			Avg. conc. 1.46 mg./m.[3] of fine aerosol for 139 d.	Inhalation	0		139 d.
79. SULFUR DIOXIDE								
Mettier, S. R., Jr., et al., 1960.	3 rabbits		M	Avg. conc. 6.0 ppm., 4 hrs./d., 5d./wk. for 32 d.	Inhalation	(14)		6 wks.
80. TANTALUM								
Beder, O. E. and Eade, G., 1956.	Dogs			.010 in. thick & 0.25 in. dia. disk	Implant into muscle.	0		
Oppenheimer, B. S., et al., 1956.	25 rats	Wistar	M	2 pieces of foil 1.5 cm. wide.	Imbeded, S.C., both sides of abdom. wall.	2 (fibrosarcoma at site of imbedding).[209]		Incomplete[210].

[3] Size .05–1.0μ.
[14] No pathology given.
[209] First appeared at 714 days.
[210] 2 animals alive 844 days post imbedment.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
81. TANTALUM OXIDE								
Delahant, A. B., 1955	6 guinea pigs			150 mg. dust susp. in isotonic saline in 10% susp. in 3 equal quantities at wkly. intervals.[77]	I.T. inj	0[211]	2 survived 300 d. or more.	360 d.
Schepers, G. W. H., 1955	Guinea pigs			100 mg. dust susp. in isotonic saline in 10% susp.	I.T. inj	0	1 yr	1 yr.
82. TIN								
Oppenheimer, B. S., et al., 1956.	25 rats	Wistar	M	2 pieces of foil 1.5 cm. wide	Imbedded S.C., both sides of abdom. wall.	0		
83. TITANIUM								
Beder, O. E., and Eade, G., 1956.	Dogs			0.25 in. dia. & 0.013 in. thick disc, in situ for 7 mos.	Implant 1. rectus abdom. muscle.	0[212]		7 mos.
84. TITANIUM OXIDE								
Grandjean, E., et al., 1956	9 rats	White		6.0 mg. dust[213] susp. in 1 cc. dist. water.	I.P	0		9 wks.
Grandjean, E., et al., 1956	8 rats	White		2.0 mg. dust[213] susp. in 1 cc. dist. water.	I.P	0		9 wks.
Grandjean, E., et al., 1956	9 rats	White		0.5 mg. dust[213] susp. in 1 cc. dist. water.	I.P	0		9 wks.
Grandjean, E., et al., 1956	Rats	White		2.5 mg. dust[213] susp. in 0.01 cc. dist. water.	Intramesenteric inj.	0[148]	All sacrificed at 85 d.	85 d.
Grandjean, E., et al., 1956	15 rats	White		50 mg. dust[213] susp. in 1 cc. dist. water.	I.T. inj	0[214]		160 d.
Grandjean, E., et al., 1956	8 rats	White		15 mg. dust[213] susp. in 1 cc. dist. water.	I.P	0		9 wks.
85. TUNGSTEN								
Delahant, A. B., 1955	6 guinea pigs			150 mg. dust susp. in isotonic saline in 10% susp.[77] in 3 equal quantities at wkly. intervals.	I.T. inj	0[88]	All sacrificed	At least 360 d.
Schepers, G. W. H., 1955	Guinea pigs			150 mg. dust susp. in isotonic saline in 10% susp.[77] in 3 equal quantities at wkly. intervals.	I.T. inj	0[215]	All survived	1 yr.

[77] Sterilized at 100° C. for 1 hour.
[88] Pigmented lesions of lungs.
[148] Intramesenteric fibrotic nodules.
[211] 3 with pulmonary dust lesions.
[212] Right side implanted with tantalum as control: negative results.
[213] Maximum size 3μ.
[214] No pulmonary fibrosis.
[215] Focal interstitial pneumonitis and bronchiolitis persists after 1 year.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
86. VANADIUM PENTOXIDE								
Mountain, J. T., et al., 1956	5 rabbits	Albino		100 ppm. in corn dextrin susp. in diet for 68 d.	P.O	0		68 d.
87. VITALLIUM								
Oppenheimer, B. S., et al., 1956.	25 rats	Wistar	M	2 pieces of metal foil 1.5 cm. wide[216]	Imbedded, S.C., both sides of abdom. wall.	5[217]		Incomplete[218].
88. WATER								
Warabioka, K., 1956	Rats		M & F	3 cc. 6 times/wk. at 0° C	S.C. lumbar region.	Tumors[219]	7 at 12 mos.	17 mos.
Watanabe, F., and Tonomura, A., 1956.	10 rats	White-mixed		Twice a wk. for 1 yr.[220]	S.C	0[221]		1 yr.
Warabioka, K., et al., 1957	4 rats			3 cc. 6 times wkly.[222]	S.C. back	Tumors[223]		At least 20 mos.
Watanabe, F., and Azuma, M., Nagasaki Igakkai Zasshi (G. Nagasaki and Assoc.) *34*, 834 (1959).	16 rats			3 cc., at 20–65° C, every 5 d. for 1–1.5 yrs.		6 sarc.[5400]		Not over 20 mos.
89. YTTRIUM								
Kyker, G. C., and Cress, E. A., 1957.	140 rats	Wistar	M & F	12.5, 25, 37.5, 50, 75, 150 & 300 mg./kg. once[100].	I.P	0[14]		6 mos.
Kyker, G. C., and Cress, E. A., 1957.	100 mice	BALB/C & CAF_1.	M & F	12.5, 25, 37.5, 50, 75, 150 & 300 mg./kg. once[100].	I.P	0[14]		6 mos.
Steffee, C. H., 1957	10 rats			As chloride, 60 mg./ml. 50 mg./kg. body wt.	I.P	0	6 between 2–33 d	Up to 33 d.
90. YTTRIUM NITRATE								
Hartwig, Q. L., et al., 1958	5 rats	Sprague-Dawley.	M	1 cc. of 200 mg. dissolved in sterile dist. water.	S.C		1 died at 10 d	At least 33 d.
Hartwig, Q. L., et al., 1958	30 rats	Sprague-Dawley.	M	350 mg./kg. body wt., dissolved in sterile dist. water.	I.P		8 died within 26 d.	30 d.

[14] No pathology given.
[100] 99% pure.
[216] Alloy of chromium, cobalt and molybdenum.
[217] 4 fibrosarcomas and 1 osteogenic sarcoma at implant site. First tumor at 453 days.
[218] 2 animals alive 725 days post-implant.
[219] 1 sarcoma; 3 thymomas; 2 pituitary tumors.
[220] 72° C.
[221] Hepatoma with diaphragmatic surface metastasis and cysticercus cyst at 3 months.
[222] "Ice cold" distilled.
[223] 2 fibrosarcomas.
[5400] 2 spindle cell sarcomas, 4 fibrosarcomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
91. ZINC								
McDonald, D. F., and Huffman, P. G., 1955.	20 rats	Long Evans	10 ää	Implanted	Bladder	0[224]		6 wks.
92. ZINC BERYLLIUM SILICATE								
Gardner, L. U., and Heslington, H. F., 1946.	Rabbits			Total of 1 gm./20 doses given in a period over 6 wks.	I.V	Tumors[225]	7 at 7 mos.	At least 1 yr.
Janes, J. M., et al., 1954	10 rabbits[119]		M	5 ml. of 1% susp. twice a wk. for 10 wks.[226].	I.V. (ear vein)	Tumors[227]		1 yr. or more.
Janes, J. J., et al., 1956	11 rabbits[226]	White		5 ml. of 1% susp. twice a wk. for 10 wks.	I.V. (ear vein)	Tumors[229]	3 died early	13 mos.
Janes, J. M., and Herrick, J. F., 1959.	19 rabbits[228]			5 ml. of 1% susp. twice wkly. for 10 wks., total 1 gm./rabbit.	I.V. ear	Tumors[230]	7 killed or died before 10 wks.	At least 10 wks.
93. ZINC CHLORIDE								
Carleton, R. H., et al., 1953	Fowls	([231])	M	0.2–0.5 cc. of a 5% soln.[232]	Testis, inj	Tumors[233]		Up to 9 mos.
Guthrie, 1956	29 rats	Albino	M	0.15 ml. of 5% zinc chloride in dist. water[234].	Intra-testicular inj.	0		15 mos.
Smith, A. G., and Powell, L., 1957.	9 roosters[235]	New Hampshire Red or white leghorn.	M	0.3 cc. of 5%	Ij. r. testis	0	4 d.– 6 mos	6 mos.
Smith, A. G., and Powell, L., 1957.	8 roosters[236]	New Hamphsire Red.	M	0.3 cc. of 5%	Inj. both testes	Tumors[237]	2 died at 2 mos	6 mos.
94. ZINC SULFATE								
Guthrie, 1956	19 rats	Albino	M	0.15–0.20 ml. of 10% zinc sulfate in dist. water[238].	Intra-testicular inj.	0		15 mos.
Smith, A. G., and Powell, L., 1957.	7 roosters[235]	New Hamsphire red or white leghorn.	M	0.3 cc. of 10%	Inj. r. testis	0	4d.–6 mos	6 mos.
Elwi, H. M., and El-Katib, H., 1960.	10 rats	Albino	M	0.2 cc. 10% soln.	Intra-testicular bilateral.	0		140 d.

[119] Adult.
[224] 40% males, 20% females with urinary cystic calculi.
[225] 100% with osteogenic sarcoma (numerous multiple foci); (4 with visceral metastases).
[226] Contained 3.36% beryllium oxide.
[227] 5 with osteogenic sarcomas (multiple foci and metastases). Splenic atrophy in tumor-bearing animals.
[228] Splenectomized.
[229] 7 with osteogenic sarcomas (some with pulmonary metastases).
[230] 12 with osteogenic sarcomas; 7 with medullary scleroses (prognostic of osteogenic sarcoma).
[231] New Hampshire Red, Barred Rock, White Leghorn, White Brainerd, Austrolorp, Delaware.
[232] Sterilized.
[233] Testicular teratomas in all strains; 11 of 43 White Leghorns characteristic of carcinoma. No metastasis.
[234] Inoculation age: 3 months.
[235] Age: 10 weeks.
[236] Age: 18 months.
[237] 1 teratoma.
[238] Inoculation age: 4 months.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
95. ACETAMIDE CH_3CONH_2								
Dessau, F. I., and Jackson, B., 1955.	5 rats	Rockland Albino.	M	40% aqueous soln. 5 d. per wk. for 205 d.	P.O. by tube	Tumors[239]	All sacrificed	205 d.
Dessau, F. I., and Jackson, B., 1955.	8 rats	Rockland Albino.	M	40% aqueous soln. 5 d. per wk. for 117 d.	P.O. by tube	0	All sacrificed	117 d.
96. ACETALDEHYDE CH_3CHO								
Umeda, M., 1956	20 rats	Hybrid		0.5–1.0 cc. of 0.5% soln. 26–41 times, then 1–1.5 cc. of 1% soln. 40–50 times 1–2 times a wk.	S.C	Tumors[240] 14		554 d.
97. ACETONE CH_3COCH_3								
Croninger, A. B., et al., 1958	23 mice	Swiss	F	Unspecified amount applied for 25 mos.	Skin, back	0	65% alive at 13 mos.	25 mos.
Croninger, A. B., et al., 1958	24 mice	CAF_1	F	Unspecified amount applied for 29 mos.	Skin, back	0	84% alive at 15 wks.	29 mos.
Gellhorn, A., 1958	Mice	Swiss & Paris R111.		1 drop daily for 5 or 6 d. wkly	Skin	0		
Glucksman, A., and Cherry, C. P., 1958.	12 rats	Hooded, virgin	F	As soln. painted once wkly. for 28 wks., thereafter, twice wkly.	Intravaginal	0	Sacrificed from 200–410 d.	Up to 410 d.
Glucksmann, A., and Cherry, C. P., 1958.	8 rats[241]	Hooded	F	As soln. painted twice wkly	Intravaginal	0	Sacrificed from 200–410 d.	410 d.
Hine, C. H., et al., 1958	30 mice	C3H	M	0.2 ml. of 100% thrice wkly	Skin	0		1 yr.
Hine, C. H., et al., 1958	16 rabbits	C3H	M	0.5 ml. of 100% thrice wkly	Skin	0		
Bock, F. G., and Moore, G. E., 1959.	10 mice[242]	Swiss	F	0.25 ml. 10 times a wk. for life	Skin	0	100% at 6 mos	Up to 15 mos.
Bock, F. G., and Moore, G. E., 1959.	10 mice[243]	Swiss	F	0.25 ml. 10 times a wk. for life	Skin	0	100% at 6 mos.	Up to 15 mos.
Bock, F. G., and Moore, G. E., 1959.	30 mice	Swiss	F	0.25 ml. 10 times a wk. for life	Skin, shaved	0	100% at 6 mos	Up to 15 mos.
Cherry, C. P., and Glucksmann, A., 1960.	12 rats	Black-hooded	F	Once weekly for 28 wks., twice wkly. for 27 wks.	Intravaginally	0		55 wks.
Miller, E. C., and Miller, J. A., 1960.	30 mice	Albino Sutter	F	Undiluted	Skin	0		15 mos.
98. ACETYLCHOLINE BROMIDE $CH_3COOCH_2\ CH_2N(CH_3)_3Br$								
Meduri, D., 1955	10 guinea pigs			.2 mg/100 gm. body wt. daily for 36 d.	I.M	[244]	Sacrificed at end of treatment.	36 d.

[239] 1 hepatocellular adenoma.
[240] 4 spindle cell sarcomas.
[241] Castrated 1–2 months prior to treatment.
[242] Skin not shaved.
[243] Sandpaper abrasion prior to acetone treatment.
[244] Macrocytic anemia.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
99. ACROLEIN $CH_2=CH-CHO$								
Salaman and Roe, 1956	15 mice	Albino "S" strain.		10 wkly. applications of 0.5% soln, in acetone (total dose—12.6 mg.)[245]	Skin	2 (total of 3 pap.).	15 at about 31 wks.	Approx. 33 wks.
Mettier, S. R., Jr., et al., 1960.	3 rabbits		M	Avg. conc. 0.6 ppm., 4 hrs./d., 5 d./wk. for 30 d.	Inhalation	(14)		6 wks.
100. ALLYL ALCOHOL $CH_2=CHCH_2OH$								
Dunlap, M. K., and Hine, C. H., 1955.	Rats		M & F	1, 5, 50, 100 & 250 ppm. in drinking water.	P.O	0		
Dunlap, M. K., and Hine, C. H., 1955.	Rats		M	5, 10, 25 & 50 ppm. of vapor 5d./wk. for 13 wks.	Inhalation	0		13 wks.
Dunlap, M. K., et al., 1958	30 rats[246]	Long-Evans	M	40, 60 or 100 ppm. of vapor 7 hrs./d., 5 d./wk. for 90 d.	Inhalation	0[247]	7 died within 46 d.	90 d.
Dunlap, M. K., et al., 1958	Rats	Long-Evans	M & F	1, 5, 50, 100, 250, 500 or 1,000 ppm. in drinking water.	P.O	0[248]	2 died, 5th & 10th wks. respectively.	13 wks.
Dunlap, M. K., et al., 1958	40 rats[246]	Long-Evans	M	1, 2, 3 or 20 ppm. of vapor 7 hrs./d., 5 d./wk. for 90 d.	Inhalation	0		90 d.
101. ALLYL FORMATE								
Gerhartz, H., et al., 1955	20 rabbits			20, 30 or 40 mg./kg. daily for 107 d	S.C	0	6 at 100 d	196 d.
102. ALLYL ISOTHIOCYANATE $CH_2=CHCH_2NCS$								
Rusch, H. P., et al., 1955	Mice	Sutter albino	F	50% soln. in acetone with 2% corn oil applied twice wkly. for duration of experiment.	Skin	Tumors[249]		Still in progress.
103. ALLYL METHANESULFONATE $CH_2=CHCH_2OSO_2CH3$								
Roe, F. J. C., 1957	20 mice[250]	Albino "S" strain.	M	10 wkly. paintings of 0.3 ml. at concentration of M/30 in acetone (Total dose, 13.5 mg.)[251]	Skin	12 (total of 42 pap.).	17 alive at 19 wks	20 wks.
104. ALLYL THIOUREA $CH_2=CHCH_2-NH-CS-NH_2$								
Skoryna, S. C., and Ross, R. C., 1951.	40 rats		M & F	0.046% in food for 2 mos., 0.06% for 13 mos.	P.O	Tumors[252,253]	4 died, others killed at intervals.	At least 15 mos.

[245] Weekly application of croton oil in acetone begun 25 days post-treatment. 2 of 0.08% solution and 16 of 0.17% solution, alternating with test substance at 3–4 day intervals.
[246] 10 per group.
[247] Pulmonary and hepatic lesions.
[248] Hepatic necrosis with regeneration.
[249] 10% with papillomas; 2 with carcinomas: 1 at 24 weeks; 1 at 25 weeks.
[250] Age: 7–9 weeks.
[251] 18 weekly applications, 0.3 ml. of 0.5% croton oil in acetone solution: begun 3 days post-treatment (first 9 alternated with test substance at 3–4 day intervals).
[252] 12 with thyroid adenomas: 4 male; 8 female.
[253] Negative controls.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
105. ALLYL URETHANE $H_2N—COOCH_2CH=CH_2$								
Berenblum, I., et al., 1959	30 mice	Swiss	M & F	12.7 mg. in saline once, 4 d. subsequent treated with twice wkly. skin applications of 5% soln. croton oil in liquid paraffin for 40 wks.	I.P	0[254,255]	All sacrificed at 40 wks.	40 wks.
Berenblum, I., et al., 1959	25 mice	Swiss	M & F	12.5 mg. as aqueous soln. once, 4 d. subsequent treated with twice wkly. skin applications of 5% soln. croton oil in liquid paraffin for 40 wks.	P.O	Tumors[256,257]	All sacrificed at 40 wks.	40 wks.
106. β-AMINOPROPIONITRILE $H_2NCH_2CH_2CN$								
Lalich, J. L., 1956	6–7 rats	Sprague-Dawley.	M & F	2 ml./kg. in diet for 7 wks	P.O	0[258]		7 wks.
Lalich, J. L., 1956	6–12 rats	Sprague-Dawley.	M & F	2.5 gm./kg.[259] in diet for 7 wks.	P.O	0[258]		7 wks.
107. β-AMINO URETHANE—HCL $H_2NHNCOOC_2H_5—HCl$								
Berenblum, I., et al., 1959	10 mice	Swiss	M & F	25 mg. as aqueous soln. once, 4 d. subsequent treated with twice-wkly. skin applications of 5% soln. croton oil in liquid paraffin for 40 wks.	P.O	0[260,257]	All sacrificed at 40 wks.	40 wks.
108. BICARNESINE $(CH_3)\ N^{+}CH_2\overset{OH}{C}HCH_2COO^{-}$								
Charlier, R., 1956	2 dogs			100 mg./kg. daily	P.O	0	100%	5 wks.
Charlier, R., 1956	2 dogs			400 mg./kg. daily	P.O	0	100%	60 d.
Charlier, R., 1956	2 dogs			200 mg./kg. daily	P.O	0	100%	5 wks.
109. BIS(DIMETHYLAMINO) FLUOROPHOSPHATE $[(CH_3)_2N]_2P(O)F$								
Okinaka, A. J., et al., 1954	25 rats	Sprague-Dawley.	F	0.1 mg./kg. in propylene glycol soln. daily, 30 injs.	I.P	0[14]	100%	30 d.

[14] No pathology given.
[254] 6/29 with papillomas; avg. 0.25±0.1 tumor/mouse. 2/29 with pulmonary adenomas; avg. 0.07±0.05 tumor/mouse.
[255] 46 croton oil controls with 11 skin papillomas; 2 pulmonary adenomas.
[256] 15/24 with papillomas; avg. 0.8±0.2 tumor/mouse.
[257] 46 croton oil controls with 11 papillomas and 2 pulmonary adenomas. Carcinogenicity questionable.
[258] Rupture of aortas.
[259] As the hydrochloride.
[260] 3/8 with papillomas; avg. 0.25±0.1 tumor/mouse. 1/8 with pulmonary adenomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
110. BIS(2-ETHYLHEXYL) HYDROGEN PHOSPHITE $[CH_3(CH_2)_3CH(C_2H_5)CH_2O]_2P(O)H$								
Joffe, M. H., et al., 1958	Guinea pigs		F	1% in diet for 70 d.	P.O	0	Some killed every 2 wks.	70 d.
Joffe, M. H., et al., 1958	10 guinea pigs.		F	Air saturated with vapor 10 mg./m[3] 6 hrs./d., 5 d./wk. for 10 wks.	Inhalation	0	2 killed every 2 wks.	10 wks.
Joffe. M. H., et al., 1958	20 guinea pigs.			Air saturated with vapor plus mist of 10 mg./m[3] 6 hrs./d., 5 d./wk. for 10 wks.	Inhalation	0	2 died	10 wks.
111. BIS(TRI-N-BUTYLFIN)OXIDE $(C_4H_9)_3Sn—O—Sn(C_4H_9)_3$								
Elsea, J. R., and Paynter, O. E., 1958.	10 rats	Charles River albino.	M	0.0032% (32 ppm.) in basic diet for 30 d.	P.O		100%	30 d.
Elsea, J. R., and Paynter, O. E., 1958	10 rats	Charles River albino.	M	0.01% (100 ppm.) in basic diet for 30 d.	P.O		100%	30 d.
Elsea, J. R., and Paynter, O. E., 1958.	10 rats	Charles River albino.	M	0.032% (320 ppm.) in basic diet for 30 d.	P.O		4 at 30 d.	30 d.
112. 1,3-BUTANEDIAL								
Bornmann, G. 1954	60 rats		M & F	1%, 2%, 5%, 10%, & 20% in drinking water[261].	P.O	0		13½ wks.
113. t-BUTYL ALCOHOL $(CH_3)_3COH$								
Miyazaki, M., 1955	4 rats	Albino		10% in basal diet for 30 d	P.O	0		30 d.
Miyazaki, M., 1955	4 rats	Albino		10% in basl diet for 30 d	P.O	0		30 d.
Miyazaki, M., 1955	4 rats	Albino		10% in basal diet for 30 d., 20% for 30 more d.	P.O	0		60 d.
114. BUTYLAMIDE $CH_3CH_2CH_2CONH_2$								
Berenblum, I., et al., 1959	29 mice	Swiss	M & F	20 mg. in saline once, 4 d. subsequent treated with twice-wkly. skin applications of 5% soln. croton oil in liquid paraffin for 40 wks.	I.P	Tumors[262,257].	All sacrificed at 40 wks.	40 wks.

[3] Size .05–1.0μ.

[257] 46 croton oil controls with 11 papillomas and 2 pulmonary adenomas. Carcinogenicity questionable.

[261] 1,3-Butyleneglycol.

[262] 9/29 with papillomas; avg. 0.55±0.15 tumor/mouse. 3/24 with pulmonary adenomas; avg. 0.2±0.1 tumor/mouse.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
115. BUTYL METHANESULFONATE $C_4H_9OSO_2CH_3$								
Roe, F. J. C., 1957	10 mice[250]	Albino "S"	M	10 wkly. paintings of 0.3 ml. at concentration of M/6 in acetone (Total dose, 80 mg.)[263].	Skin	0	9 alive at 19 wks	20 wks.
Roe, F. J. C., 1957	10 mice[250]	Albino "S"	M	10 wkly. paintings of 0.3 ml. at concentration of M/60 in acetone (Total dose, 8 mg.)[263].	Skin	0	All alive at 19 wks.	20 wks.
116. 1,4-BUTYNEDIOL $HOCH_2C{=}CCH_2OH$								
Roe, F. J. C., 1957	10 mice[250]	Albino "S"	M	10 wkly. paintings of 0.3 ml. at concentration of M/60 in acetone (Total dose, 4 mg.)[263]	Skin	1 (with 1 pap.).	9 alive at 19 wks	20 wks.
Roe, F. J. C., 1957	10 mice[250]	Albino "S"	M	10 wkly. paintings of 0.3 ml. at concentration of M/6 in acetone (total dose, 40 mg.)[263]	Skin	0	All alive at 19 wks.	20 wks.
117. CALCIUM DISODIUM ETHYLENEDIAMINE TETRAACETATE $(HOOCCH_2)_2NCH_2CH_2N(CH_2COOH)_2$. Ca di-UA salt								
Dagirmanjian, R., et al., 1954.	Rats	Rochester, Wistar, Albino.	F	500 mg./kg., 1000 mg./kg., 1500 mg./kg., 2000 mg./kg., 3000 mg./kg., 3300 mg./kg., 3500 mg./kg., 3700 mg./kg., 4000 mg./kg., 5000 mg./kg., 6000 mg./kg., 7000 mg./kg.	I.P	0	At 7000 mg.—100% mortality; at 6,000 mg.—100% mortality; at 5,000 mg.—100% morality.	30 d.
118. CARBAMOYL PHOSPHATE $H_2N—COOPO(OH)_2$								
Berenblum, I., et al., 1959	20 mice	Swiss	M & F	30 mg. as aqueous soln. once, 4 d. subsequent treated with twice-wkly. skin applications of 5% soln. croton oil in liquid paraffin for 40 wks.	I.P	Tumors[264,257].	All sacrificed at 40 wks.	40 wks.
Berenblum, I., et al., 1959	22 mice	Swiss	M & F	30 mg. as aqueous soln. once, 4 d. subsequent treated with twice-wkly. skin applications of 5% soln. croton oil in liquid paraffin for 40 wks.	P.O	Tumors[265,257].	All sacrificed at 40 wks.	40 wks.

[250] Age: 7–9 weeks.
[257] 46 croton oil controls with 11 papillomas and 2 pulmonary adenomas. Carcinogenicity questionable.
[263] 18 weekly applications 0.3 ml. of 0.5% croton oil in acetone; begun 3 days after first application of test substance (first 9 alternated with test substance at 3–4 day intervals).
[264] 10/18 with papillomas; avg. 0.55±0.2 tumor/mouse. 1/18 with pulmonary carcinoma.
[265] 11/18 with papillomas; avg. 0.85±0.2 tumor/mouse.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
119. CARBOETHOXYALANINE $CH_3CH(NHCOOC_2H_5)COOH$								
Berenblum, I., et al., 1959	10 mice	Swiss	M & F	5 mg. in saline soln. once, 4 d. subsequent treated with twice-wkly. skin applications of 5% soln. croton oil in liquid paraffin for 40 wks.	I.P	0[266,255]	All sacrificed at 40 wks.	40 wks.
Berenblum, I., et al., 1959	30 mice	Swiss	M & F	1 mg. in saline soln. once, 4 d. subsequent treated with twice-wkly. skin applications of 5% soln. croton oil in liquid paraffin for 40 wks.	I.P	0[267,255]	All sacrificed at 40 wks.	40 wks.
120. CARBOETHOXYASPARTIC ACID $HOOCCH_2CH(NHCOOC_2H_5)COOH$								
Berenblum, I., et al., 1959	30 mice	Swiss	M & F	5 mg. in saline soln. once, 4 d. subsequent treated with twice-wkly. skin applications of 5% soln. croton oil in liquid paraffin for 40 wks.	I.P	Tumors[268,257]	All sacrificed at 40 wks.	40 wks.
121. CARBOETHOXYGLUTAMIC ACID $HOOCCH_2CH_2CH(NHCOOC_2H_5)COOH$								
Berenblum, I., et al., 1959	40 mice	Swiss	M & F	5 mg. in saline soln. once, 4 d. subsequent treated with twice-wkly. skin applications of 5% soln. croton oil in liquid paraffin for 40 wks.	I.P	0[269,255]	All sacrificed at 40 wks.	40 wks.
121A. CARBOETHOXYGLYCINE $C_2H_5OOC\text{-}NHCH_2COOH$								
Berenblum, I., et al., 1959	30 mice	Swiss	M & F	1 mg. in saline soln. once, 4 d. subsequent treated with twice-wkly. skin applications of 5% soln. croton oil in liquid paraffin for 40 wks.	I.P	0[270,255]	All sacrificed at 40 wks.	40 wks.
122. CARBOETHOXYPHOSPHATE $C_2H_5OCOO—PO(OH)_2$								
Berenblum, I., et al., 1959	26 mice	Swiss	M & F	5 mg. in saline soln. once, 4 d. subsequent treated with twice-wkly. skin applications of 5% soln. croton oil in liquid paraffin for 40 wks.	I.P	Tumors[270,257]	All sacrificed at 40 wks.	40 wks.

[255] 46 croton oil controls with 11 skin papillomas; 2 pulmonary adenomas.
[257] 46 croton oil controls with 11 papillomas and 2 pulmonary adenomas. Carcinogenicity questionable.
[266] 4/10 with papillomas; avg. 0.3±0.1 tumor/mouse.
[267] 10/30 with papillomas; avg. 0.3±0.1 tumor/mouse. 1/28: pulmonary adenomas.
[268] 11/24 with papillomas; avg. 0.55±0.15 tumor/mouse. 1/24 with pulmonary adenomas.
[269] 11/40 with papillomas; avg. 0.3±0.1 tumor/mouse.
[270] 4/9 with papillomas; avg. 0.4±0.2 tumor/mouse. 4/9 with pulmonary adenomas; avg. 0.9±0.5 tumor/mouse.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
123. CARBON DISULFIDE CS_2								
Guarino, A., and Arciello, G., 1954.	16 rabbits			Exposure 0.65 mg./liter for 10–20 min daily.	Inhalation	[271]		Up to 8 mos
Paterni, L., et al., 1954	12 rats			1 ml. of 1:2 in olive oil, w/v. every second d.	I.M	[272]	2 survived at the 5th wk.	39 d.
Uenishi, T., 1954	3 rabbits			0.1 cc. 5 d. a wk., 6 wks	S.C	0[273]		6 wks.
Lee, Hee Tong, 1955	3 rats	Albino		200–220 ppm. 20 hrs./d., 16.0% fat diet.	Inhalation	0	All died within 30 d.	Up to 30 d.
Lee, Hee Tong, 1955	5 rats	Albino		200–220 ppm. 20 hrs./d., 3.4% fat and 28.0% protein in diet.	Inhalation	0	All died by 32 d	32 d.
Lee, Hee Tong, 1955	3 rats	Albino		200–220 ppm. 20 hrs./d., 3.4% fat and 10.7% protein in diet.	Inhalation	0	All died within 30 d.	Up to 30 d
124. CARBON TETRACHLORIDE CCl_4								
Costa, A., and Smorlesi, L., 1951.	13 rats			5–7 min. daily exposure to vapor for 60 d.	Inhalation	[274]	8 sacrificed at 48 hrs., 5 at 7 d. after partial hepatectomy.	Up to 67 d.
Maurea, C., and Arciello, G., 1952.	12 guinea pigs		M & F	0.1 ml. daily for 30 d	I.M	[275]		Up to 450 d.
Maurea, C., and Arciello, G., 1952.	10 guinea pigs		M & F	1 ml. daily on cotton pad rubbed on skin for 40 d.	Skin	[275]		Up to 50 d.
Aragona, F., and Barone, P., 1953.	8 rats		M	0.25 ml. twice wkly	S.C	0[276]	Sacrificed at intervals.	Up to 42 d.
Aterman, K., 1954 (B)	10 rats	Albino	F	0.1 ml. twice wkly. 10 inj., 0.12 ml. twice wkly. 18 injs.	S.C	0		14 wks.
Aterman, K., 1954 (B)	10 rats	Albino	F	0.1 ml. twice wkly. 10 injs., 0.12 ml. twice wkly. 18 injs.[277]	S.C	0		14 wks.
Aterman, K., 1954 (C)	10 rats	Albino	F	29 injs. of 0.1–0.12 ml. during 14 wks.	S.C	0	All sacrificed at 14 wks.	14 wks.
Aterman, K., 1954 (A)	44 rats	Albino	F	0.1 ml. 9 injs. and 0.12 ml. for a further 20 injs. then 0.15 ml.	S.C	0	10 killed at 14 wks., 10 killed at 31 wks.	At least 36 wks.
Aterman, K., 1954 (B)	Rats	Albino	F	Twice wkly.—0.1 ml. 10 injs., 0.12 ml. 18 injs., 0.5 ml. 22 injs., 0.1 ml. 22 injs.	S.C	0		
Aterman, K., 1954 (B)	10 rats	Albino	F	0.1 ml. twice wkly. 10 injs., 0.12 ml. twice wkly. 18 injs., 0.5 ml. 22 injs., 0.1 ml. 22 injs.[277].	S.C	0		31 wks.

[271] Histological changes of coronary vessels.
[272] Hypoplasia or a typical hyperplasia of bone marrow.
[273] Serum-cholinesterase study.
[274] Study of regression of cirrhotic changes after hepatectomy.
[275] Hematological study.
[276] Mild cirrhosis, thyroid hypertrophy.
[277] Cortisone given at termination of experiment.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
124. CARBON TETRACHLORIDE CCl_4 (Continued)								
Diengott and Ungar, 1954	7 rats	Albino	M	Exposed 3 times wkly., 15 times	Inhalation	0		5 wks.
Tardini, A., and Sannazzari, G. L., 1954.	43 rats	Albino		Exposure to vapor 5 min. twice daily for 2 mos., then once daily for 3 mos., one group of 18 rats received 0.35 mg. of ACTH daily during the last 3 mos.	Inhalation	0[278]	Dying or sacrificed at intervals.	5 mos.
Tisch, D. E., et al., 1954	8 dogs			0.125–0.5 ml./kg. three times a wk. in a 1:1 soln. with corn oil.	P.O. (stomach tube).	0[14]		Up to 35 d.
Barone, P., and D'Aquino, S., 1955.	6 rats		M	Daily exposure to vapor for 2 mos. of 3 rats that afterwards were connected in parabiosis to the other 3 rats and exposed for 15 d. to vapor every second d. Then the second partner was partially hepatectomised and both killed 48–72 hrs. later.	Inhalation	0[279]		$2\frac{1}{2}$ mos.
Bonetti, E., et al., 1956	65 rats	Wistar glaxo	M	Exposure to vapor, 8 rats recd. 30 mgm of α-tocopherol wkly.	Inhalation	0[280]		200 d.
Campanacci, L., Jr., et al., 1956.	20 rats			Exposure to vapor for 60 d. ten rats recd. also S.T.H.	Inhalation	0[281]		60 d.
Hoffman, J., et al., 1956	27 rats	Wistar	M	Diluted with liq. petrolatum, 0.066 cc./100 gm. body wt. given twice, at 8 & 16 wks. of age.	I.P	0	Killed 48, 72 & 120 hrs. after last inj.	8 wks.
Hoffman, J., et al., 1956	11 rats[282]	Wistar	M	Diluted with liq. petrolatum 0.066 cc./100 gm. body wt. given once.	I.P	0	Killed at 16 wks. of age.	8 wks.
Wahi, P. N., et al., 1956	250 rats	Albino	M & F	0.1 cc./100 gm. body wt. in equal vol. lt. liq. petrolatum twice a wk. for 6 to 14 wks.	S.C	0[283]	Killed at wkly. intervals from 3rd wk. onward.	Up to 14 wks.
Mignani, E., and Bettini, U., 1957.	8 rats	White		5 min. daily exposure to vapor for 1 or 2 mos.	Inhalation	0[284]	3 sacrificed after 1 mo., 5 after 2 mos.	2 mos.
Andervont, H. B., 1958	37 mice	C3H	F	0.2 cc. of 2% olive oil soln. twice at 1 wk. interval, 3% soln. given wkly. for 17 wks.	P.O. (stomach tube).	Tumors[285,286]		19 wks.
Andervont, H. B., 1958	42 mice[287]	C3H	F	0.2 cc. of 2% olive oil soln. twice at 1 wk. interval, 3% soln. given wkly. for 17 was.	P.O. (stomach tube).	Tumors[288,286]		19 wks.
Andervont, H. B., 1958	77 mice	C3H	M	0.2 cc. of 2% olive oil soln. twice at 1 wk. interval, 3% soln. given wkly. for 17 wks.	P.O. (tomach tube).	Tumors[289, 290].		19 wks.

[14] No pathology given.
[278] Study of cirrhotic changes.
[279] Study of regression of cirrhotic lesions.
[280] Study of cirrhotic changes, muscular and testicular lesions.
[281] Study of cirrhotic lesions and hypothalamus secretion.
[282] Age: 8 weeks.
[283] Study of regression of cirrhotic lesions.
[284] Cirrhosis.
[285] 17 with hepatomas; avg. 1.5 tumors/mouse.
[286] 1/30 untreated controls developed hepatomas.
[287] Carrying mammary tumor agent.
[288] 12 with hepatomas; avg. 1.2 tumors/mouse.
[289] 61 with hepatomas; avg. 1.8 tumors/mouse.
[290] 22/45 untreated controls developed hepatomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
124. CARBON TETRACHLORIDE CCl_4 (Continued)								
Maltoni, C., et al., 1958	50 rats[291]			Look at previous paper 1957	Inhalation	0[292]	Sacrificed at various intervals.	Up to 180 d.
Ryabinina, Z. A., Biull. Eksper. Biol. i Med., *46*, 105–7 (1958).	40 rats		F	0.2 ml. 2 times wkly. for 9.5 wks	S.C	24[5401]		375 d.
Korpássy, B., et al, 1959	25 rats[293]	White	F	0.1 ml. every 4th d. from 15th d. following castration.	S.C	Tumors[294, 295].	18	2 yrs.
Leduc, E. H., and Wilson, J. W., 1959.	Mice	B U B	M	0.1 ml. of 40% soln. in olive oil, thrice wkly. for 45–66 doses, some given thorotrast daily.	P.O. (stomach tube).	Tumors[296]		At least 13½ mos.
Sutton, P. M., 1960	Rats	Wistar albino			Inhalation	0[297]	Killed at 6, 11, 16, 26 & 34 wks.	Up to 34 wks.
125. CARBROMAL $(C_2H_5)_2CBrCONHCONH_2$								
Roe and Salaman, 1955	20 mice	Stock albino "S".	M	2 wkly. applications of 0.3 ml. of 5% soln. in acetone (Total dose: 30.0 mg.[298]).	Skin	1 (skin tumor).	13 at 23 wks.	At least 24 wks.
126. CHLORAL HYDRATE $CCl_3CH(OH)_2$								
Roe and Salaman, 1955	20 mice	Stock albino "S".	M	0.3 ml. of 5% soln. in acetone, wkly. for 15 wks. (Total dose: 225.0 mg.[299]).	Skin	4 (skin tumors).	20 alive at 18 wks.	At least 19 wks.
Roe and Salaman, 1955	20 mice	Stock albino "S".	M	2 wkly. applications of 0.3 ml. of 4% soln. in acetone (Total dose: 24.0 mg.[298]).	Skin	4 (skin tumors).	17 at 23 wks.	At least 24 wks.
127. CHLOROBUTANOL $(CH_3)_2C(OH)CCl_3$								
Roe and Salaman, 1955	20 mice	Stock albino "S".	M	2 wkly. applications of 0.3 ml. of 16% soln. in acetone (Total dose: 96.0 mg.[298]).	Skin	0	18 alive at 22 wks.	At least 23 wks.

[291] 25 splenectomized.
[292] Histological study of cirrhotic changes.
[293] Castrated followed by auto-transplantation of ovarian tissue into spleen.
[294] 1 granulosa cell tumor; 2 luteoma in intrasplenic ovaries.
[295] 15/17 intrasplenic ovarian grafted controls with tumors in grafts.
[296] Hepatomas. Successful tumor transplantation from animal killed 8 months after treatment.
[297] Hepatic fibrosis and parenchymal regeneration.
[298] 18 weekly applications 0.3 ml. of 0.5% croton oil in acetone solution begun 4 weeks post-treatment.
[299] 18 weekly applications 0.3 ml. of 0.5% croton oil in acetone solution; first alternated (3–4 day intervals) with applications of test substance.
[5401] Mammary, first at 5.5 mos.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
128. β-CHLOROETHYL METHYLAMINEOXIDE HYDROCHLORIDE $ClCH_2CH_2NH(O)CH_3$								
Steinhoff, D., and Kuk, B. T., 1957.	36 rats[300]	BD	Both	14 mg./kg. twice wkly. for 3½ mos.—total dose 385 mg./kg.	240 mg./kg. total dose given S.C. as 15 mg./kg. inj. 1–2 times a wk. for 9 mos., I.V. or I.P.	Tumors[301]	14 at 635 d	2 yrs.
Steinhoff, D., and Kuk, B. T., 1957.	36 rats	BD III, BD IV	M & F	14 mg./kg. I.P. or I.V. twice wkly. for 3½ mos., 240 mg./kg. per os for 8 mos., 15 mg./kg. S.C. for next 9 mos., once or twice wkly., (total dose: 1.3 g./kg.)	I.V., S.C., per os, I.P.	Tumors[302]	12 at 750 d	840 d.
129. CYSTAMINE, DIHYDROCHLORIDE $(H_2NCH_2CH_2S—)_2—2HCl$								
Bacq, Z. M., and Ponlot, R., 1955.	5 rats (62–90 g.)	White		0.25% in food daily for 15 d., then 0.5% daily.	Oral	0		60 d.
Bacq, Z. M., and Ponlot, R., 1955.	6 rats (62–90 g.)	White		0.5% in food daily for 13 d., then 1% daily.	Oral	0		58 d.
130. CYSTINE								
Gillman, J., et al., 1954	6 rats	Wistar	F	1% of Coward's diet[303]	P.O	0	76–91 d	91 d.
Gillman, J., et al., 1954	5 rats	Wistar	M	1% of Coward's diet[303]	P.O	0	66–91 d	91 d.
131. DECAMETHYLENE DIGUANIDINE $H_2NC(NH)NH(CH_2)_{10}NHC(NH)NH_2$								
Herbertson, B. M., 1958	48 guinea pigs	Mixed	M & F	2.5–5 mg./kg. body wt. as 0.1% soln. in physiological saline once.[304]	S.C	0[305]		30 d.
132. DIALLYLAMINE $CH_2=CHCH_2NHCH_2CH=CH_2$								
Hine, C. H., et al., 1960	60 rats[306]	Long-Evans	M	25, 50, 100 & 200 ppm. of vapor 7 hrs./d. for 50 exposures.	Inhalation	0	5 died in 200 ppm. group.	At least 50 d.
133. 1,2-DIBROMO-3-CHLOROPROPANE $BrCH_2\overset{Br}{C}HCH_2Cl$								
Kodama, J. K., and Dunlap, M. K., 1956.	140 rats		70 ää	5, 20, 150, 450 & 1350 ppm. in diet for 90 d.	P.O	0	Over 50% mortality in 1350 ppm. level.	90 d.
Kodama, J. K., and Dunlap, M. K., 1956.	60 rats		M	50 exposures to 5, 10, 20 & 50 ppm. in 10 wks.	Inhalation	0	3 died in 50 ppm. level.	10 wks.

[300] Age: 100 days.
[301] 1 osteogenic sarcoma; 1 gastric spindle cell sarcoma; 1 basal cell carcinoma and leukemia. Spontaneous tumor incidence this strain: 1.5%.
[302] 1 cranial osteogenic sarcoma; 1 gastric spindle cell sarcoma; 1 basal cell carcinoma.
[303] Coward's diet: 71% dextrinized corn starch, 15% casein, 10% brewer's yeast, 4% salts.
[304] Synthalin.
[305] Liver regeneration.
[306] 15/group.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
134. DIBUTYLTIN DICHLORIDE $(C_4H_9)_2Sn(Cl)_2$								
Barnes, J. M., and Magee, P. N., 1958.	Guinea pigs			Unspecified repeated doses given by drops.	P.O	0		
Barnes, J. M., and Magee, P. N., 1958.	Rats	Porton	M & F	50 mg./kg. as soln. in arachis oil for 3 successive d.	P.O. (stomach tube).	0[307]	30–50% died early.	Up to 12 mos.
Barnes, J. M., and Magee, P. N., 1958.	8 rabbits			25–50 mg./kg. by drops, repeated doses.	P.O	0	5 killed due to treatment.	
135. DIETHYL CARBONATE $(C_2H_5O)_2CO$								
Anderson, R. C., et al., 1955	3 dogs	Mongrel	F	0.05 cc./kg. daily for 4 mos	I.M	0[308]	1 sacrificed	At least 4 mos.
Anderson, R. C., et al., 1955	3 dogs	Mongrel	F	0.10 cc./kg. daily for 4 mos	I.M	0	All sacrificed	4 mos.
Salaman and Roe, 1956	25 mice	Albino "S"		10 thrice wkly. applications (pure substance) (total dose 2.9 g.).[309]	Skin	2 (1 pap. each).	23 at about 28 wks.	Approx. 30 wks.
Berenblum, I., et al., 1959	30 mice	Swiss	M & F	11.4 mg. in saline once, 4 d. subsequent treated with twice-wkly. skin applications of 5% croton oil in liq. paraffin for 40 wks.	I.P	Tumors[310], [257].	All sacrificed at 40 wks.	40 wks.
Berenblum, I., et al., 1959	20 mice	Swiss	M & F	12.5 mg. as aqueous soln. once, 4 d. subsequent treated with twice-wkly. skin applications of 5% soln. croton oil in liq. paraffin for 40 wks.	P.O	Tumors[311], [257].	All sacrificed at 40 wks.	40 wks.
136. DIETHYL 2-CHLOROVINYL PHOSPHATE $(C_2H_5O)_2P(O)OCH{=}CHCl$								
Kodama, J. K., et al., 1954	Rats	Long-Evans	F	6.3, 12.5, 50 or 100 ppm. in the diet	P.O	0	4 of 6 at 100 ppm. died at the 2nd wk.	60 d.
137. DIETHYLTIN DICHLORIDE $(C_2H_5)_2SnCl_2$								
Magee, P. N., et al., 1957	Rats	Porton albino		Up to 100 ppm	P.O. (stomach tube).	0		
138. O,O-DIETHYL S-ETHYLMERCAPTOETHANOL THIOPHOSPHATE $(C_2H_5O)_2P(S)OCH_2CH_2SC_2H_5$								
Barnes, J. M., and Denz, F. A., 1954.	12 rats	Albino	F	10 ppm. added to dry diet for 16 wks.	P.O	0[14,312]		16 wks.
Barnes, J. M., and Denz, F. A., 1954.	18 rats	Albino	F	10 ppm. added to dry diet for 11 wks.[312]	P.O	0[14]		11 wks.

[14] No pathology given.
[257] 46 croton oil controls with 11 papillomas and 2 pulmonary adenomas. Carcinogenicity questionable.
[307] Cholangeal, hepatic and pancreatic fibrosis.
[308] Experiment not terminated.
[309] 18 weekly applications of 0.17% croton oil in acetone solution begun 23 days post-treatment.
[310] 12/30 with papillomas; avg. 0.4±0.1 tumor/mouse.
[311] 11/15 with papillomas; avg. 1.1±0.2 tumors/mouse. 1/15 with pulmonary carcinoma; avg. 0.05±0.05 tumor/mouse.
[312] Contains 48% P=O isomer and P=S isomer.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
138. O,O-DIETHYL S-ETHYLMERCAPTOETHANOL THIOPHOSPHATE $(C_2H_5O)_2P(S)OCH_2CH_2SC_2H_5$ (Continued)								
Barnes, J. M., and Denz, F. A., 1954.	18 rats	Albino	F	3 ppm. added to dry diet for 11 wks.[312]	P.O	0[14]		11 wks.
Barnes, J. M., and Denz, F. A., 1954.	18 rats	Albino	F	1 ppm. added to dry diet for 11 wks.[312]	P.O	0[14]		11 wks.
Barnes, J. M., and Denz, F. A., 1954.	12 rats	Albino	F	20 ppm. added to dry diet for 16 wks.	P.O	0[14]		16 wks.
Barnes, J. M., and Denz, F. A., 1954.	12 rats	Albino	F	50 ppm. added to dry diet for 16 wks.[312]	P.O	0	3 killed after 4 wks.	16 wks.
Deichmann, W. B., and Rakoczy, R., 1955.	5 rats	Sprague–Dawley.		0.66 mg./kg. body wt. in corn oil, once daily for 65 d. in 90 d.[313]	P.O. (stomach tube).	0	All killed at 90 d.	90 d.
Deichmann, W. B., and Rakoczy, R., 1955.	6 rabbits	New Zealand		Greens harvested and fed 35 d. after being sprayed with compound[313] (ingested ca. 0.07 mg./kg. body wt./d. for 94 d.).	P.O	0[14]	All killed at end of experiment.	At least 94 d.
Deichmann, W. B., and Rakoczy, R., 1955.	6 rabbits	New Zealand		Greens harvested & fed 21 d. after being sprayed with compound[313] (ingested ca. 0.37 mg./kg. body wt./d. for 98 d.).	P.O	0[14]	All killed at end of experiment.	At least 98 d.
Deichmann, W. B., and Rakoczy, R., 1955.	6 rabbits	New Zealand		Greens harvested & fed 10 d. after being sprayed with compound[313] (ingested ca. 0.5 mg./kg. body wt./d. for 100 d.).	P.O	0	1 died at 64 d.	At least 100 d.
Deichmann, W. B., and Rakoczy, R., 1955.	6 rabbits	New Zealand		Greens harvested & fed 24 hrs. after being sprayed with compound[313] (ingested ca. 2.3 mg/.kg. body wt./d. for 30 d.).	P.O	0[14]	2 died before 30 d.	At least 40 d.
Deichmann, W. B., and Rakoczy, R., 1955.	6 rabbits	New Zealand		Greens harvested & fed 2 hrs. after being sprayed with compound[313] (ingested ca. 1.5 mg./kg. body wt./d. for 30 d.).	P.O	0[14]	3 died before 30 d.	At least 51 d.
Deichmann, W. B., and Rakoczy, R., 1955.	5 rats	Sprague-Dawley.		0.4 mg./kg. body wt. in corn oil, once daily for 65 d. in 90 d.[314]	P.O. (stomach tube).	0	All killed at 90 d.	90 d.
Deichmann, W. B., and Rakoczy, R., 1955.	5 rats	Sprague-Dawley.		0.9 mg./kg. body wt. in corn oil, once daily for 65 d. in 90 d.[313]	P.O. (stomach tube).	0	All killed at 90 d.	90 d.
Deichmann, W. B., and Rakoczy, R., 1955.	5 rats	Sprague-Dawley.		1.89 mg./kg. body wt. in corn oil, once daily for 65 d. in 90 d.[313]	P.O. (stomach tube).	0	1 died before 90 d.	90 d.
139. DIETHYLENE GLYCOL $HOCH_2CH_2OCH_2CH_2OH$								
Bornmann, G., 1954	24 rats		M & F	1% & 2% in drinking water	P.O	0		13½ wks.

[14] No pathology given.
[312] Contains 48% P=0 isomer and P=S isomer.
[313] Systox, commercial preparation.
[314] Systox, commercial preparation containing approximately 60% of the thiono isomer and 40% of the thiol isomer.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
140. 1,4-DIMETHANE SULFONOXY BUTANE $CH_3SO_2O(CH_2)_4OSO_2CH_3$								
Shimkin, M. B., 1954	30 mice[316]	Strain A	F	0.5 mg.[316] dispersed in 0.1 cc. water given on 3 consecutive d., repeated 3 times at 2 wk. intervals. Total dose of 6.0 mg.	2-I.P	Tumors[317]	2 died during inj. period.	37 wks.
Roe and Salaman, 1955	24 mice	Stock albino "S" strain.	M	0.3 ml. of 0.67% soln. in acetone, once (Total dosage: 2.0 mg.[318]).	Skin	0	Only 7 survived excessively high single dose.	Approx. 21 wks.
Roe and Salaman, 1955	10 mice	Stock albino "S" strain.	M	6 wkly. 0.3 ml. applications of 0.067% soln. in acetone and 4 wkly. 0.3 ml. applications of 0.2% soln. in acetone. (Total dosage 3.6 mg.[299]).	Skin	0	8 at 18 wks	Approx. 19 wks.
Roe and Salaman, 1955	10 rats	Stock albino "S" strain.	M	0.3 ml. of 0.2% soln. in acetone wkly. for 10 wks. (Total dosage: 6.0 mg.)[299].	Skin	1 (skin tumor).	8 alive at 18 wks	Approx. 19 wks.
Pizzetti, F., et al., 1956	3 rabbits			0.5 mg. every second d. for 29 d	I.M	0	Killed 24 hr. after last inj.	30 d.
Roe, F. J. C., 1957	10 mice[260]	Albino "S" strain.	M	10 wkly. paintings at conc. of M/120 in acetone (Total dose of 6 mg.)[263].	Skin	1 (with 1 pap.).	8 alive at 19 wks	20 wks.
Roe, F. J. C., 1957	10 mice[260]	Albino "S" strain.	M	6 wkly. paintings of 0.3 ml. at conc. of M/360 in acetone, followed by 4 wkly. paintings at M/120 in acetone (Total dose of 3.6 mg.)[263].	Skin	0	8 alive at 19 wks	20 wks.
141. CIS-1,4-DIMETHANESULFONOXY-2-BUTENE $CH_3SO_2OCH_2CH{=}CHCH_2OSO_2CH_3$								
Roe, F. J. C., 1957	18 mice[260]	Albino "S" strain.	M	10 wkly. paintings of 0.3 ml. at conc. of M/60 in acetone (Total dose, 12 mg.)[263].	Skin	3 (total of 14 pap.).	17 alive at 19 wks.	20 wks.
142. TRANS-1,4-DIMETHANESULFONOXY-2-BUTENE $CH_3SO_2OCH_2CH{=}CHCH_2OSO_2CH_3$								
Roe, F. J. C., 1957	20 mice[260]	Albino "S" strain.	M	10 wkly. paintings of 0.3 ml. at conc. of M/60 in acetone (Total dose, 12 mg.)[263].	Skin	10 (total of 29 pap.).	18 alive at 19 wks	20 wks.
143. 1,4-DIMETHANESULFONOXY-2-BUTYNE $CH_3SO_2OCH_2C{\equiv}CCH_2OSO_2CH_3$								
Roe, F. J. C., 1957	10 mice[260]	Albino "S" strain.	M	10 wkly. paintings of 0.3 ml. at conc. of M/60 in acetone (Total dose of 12 mg.)[263].	Skin	5[319]	10 alive at 19 wks	More than 21 wks.

[260] Age: 7–9 weeks.
[263] 18 weekly applications 0.3 ml. of 0.5% croton oil in acetone; begun 3 days after first application of test substance (first 9 alternated with test substance at 3–4 day intervals).
[299] 18 weekly applications 0.3 ml. of 0.5% croton oil in acetone solution; first alternated (3–4 day intervals) with applications of test substance.
[316] Myleran.
[316] Virgin—age: 3 months.
[317] 8/21 with pulmonary tumors. 0.48 tumors/mouse.
[318] 18 weekly applications of 0.3 ml. of 0.5% croton oil in acetone solution begun 3 weeks post-treatment.
[319] 14 skin tumors (5 carcinomas, 9 papillomas).

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
143. 1,4-DIMETHANESULFONOXY-2-BUTYNE $CH_3SO_2OCH_2C{-}{-}CCH_2OSO_2CH_3$ (Continued)								
Roe, F. J. C., 1957	20 mice[250]	Albino "S" strain.	M	10 wkly. paintings of 0.3 ml. at conc. of M/60 in acetone (Total dose, 12 mg.).	Skin	2[320]	17 at 20 wks	At least 9 mos.
Roe, F. J. C., 1957	10 mice[250]	Albino "S" strain.	M	6 wkly. paintings of 0.3 ml. at conc. of M/180 in acetone, followed by 4 wkly. paintings at M/60 (Total dose, 8 mg.)[263].	Skin	5 (total of 12 pap.).	9 alive at 19 wks	More than 21 wk.
144. 1,8-DIMETHANESULFONOXYOCTANE $CH_3SO_2O(CH_2)_8OSO_2CH_3$								
Roe, F. J. C., 1957	10 mice[250]	Albino "S" strain.	M	10 wkly. paintings of 0.3 ml. at conc. of M/60 in acetone (Total dose, 15 mg.)[263]	Skin	0	8 alive at 19 wks	20 wks.
Roe, F. J. C., 1957	10 mice[250]	Albino "S" strain.	M	10 wkly. paintings of 0.3 ml. at conc. of M/60 in acetone (Total dose, 15 mg.)[263]	Skin	0	8 alive at 19	20 wks.
Roe, F. J. C., 1957	10 mice[250]	Albino "S" strain.	M	10 wkly. paintings of 0.3 ml. at conc. of M/20 in acetone (Total dose, 45 mg.)[263]	Skin	0	Survival time very poor.	Less than 19 wks.
145. B,B-DIMETHYLCYSTEINE $HS{-}C(CH_3)_2{-}C(NH_2)COOH$								
Haddow, A., and Horning, E. S., 1960.	20 mice	CBA		2 mg. wkly. for 19 wks	S.C	0	18 at 13 mos	13 mos. to date.
146. O,O-DIMETHYL 2,2-CHLOROVINYL PHOSPHATE $(CH_3O)_2P(O)OCH{=}CCl_2$								
Klotzsche, C., 1956	Rats	Albino	M	10 mg./kg.[321]	P.O. by tube	0		6 wks.
Durham, W. F., et al., 1957	10 rats	White-Sherman	F	69.9, 35.7, 14.2, 3.5, 1.5, or 0.4 mg./kg. in diet for 90 d.	P.O	0		90 d.
147. O,O-DIMETHYL 1-HYDROXY-2,2,2-TRICHLORO-ETHYLPHOSPHONATE $(CH_3O)_2P(O)CH(OH)CCl_3$								
DuBois and Cotter, 1955	5 rats	Sprague-Dawley.	M & F	150 mg.[322]/kg. body wt. in aqueous soln. daily for duration of experiment.	I.P	0[14]	4 deaths before 11 d.	60 d.
DuBois and Cotter, 1955	5 rats	Sprague-Dawley.	M & F	100 mg.[322]/kg. body wt. in aqueous soln. daily for duration of experiment.	I.P	0[14]	3 alive at 60 d	At least 60 d.
DuBois and Cotter, 1955	5 rats	Sprague-Dawley.		50 mg.[323]/kg. body wt. in aqueous soln. daily for duration of experiment.	I.P	0[14]	All alive at 60 d	At least 60 d.

[14] No pathology given.
[250] Age: 7–9 weeks.
[263] 18 weekly applications 0.3 ml. of 0.5% croton oil in acetone; begun 3 days after first application of test substance (first 9 alternated with test substance at 3–4 day intervals).
[320] Papilloma on each treated area.
[321] In emulsion, emulsifier not mentioned.
[322] Dipterex.
[323] Dipterex, 99+% pure.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
148. DIMETHYLNITROSAMINE $(CH_3)_2N—NO$ (SEE ALSO COMPOUND 202)								
Barnes, J. M., and Magee, P. N., 1954.	6 rats			200 ppm. in diet for 34–37 d	P.O.	0[324]	100% at 34 d	37 d.
Barnes, J. M., and Magee, P. N., 1954.	6 rats			100 ppm. in diet for 62–95 d	P.O.	0[324]	6 at 62 d	95 d.
Barnes, J. M., and Magee, P. N., 1954.	6 rats			50 ppm. in diet for 110 d	P.O.	0	100% at 110 d	110 d.
Magee and Barnes, 1956	6 rabbits	Cross-bred	M	Incorporated into powder diet at level of 20 ppm. for 10 wks., 30 ppm. for the next 4 wks., and 50 ppm. for the next 8 wks.[325]	P.O.	0	5 at 12 wks., 1 at 21 wks.	22 wks.
Magee and Barnes, 1956	20 rats	Albino	10 M & 10 F	Incorporated into powder diet at level of 50 ppm.[325]	P.O.	19[326]	1st death at 27 wks.	42 wks.
Magee and Barnes, 1956	6 rats	Albino	M & F	Incorporated into powder diet at level of 200 ppm.[325]	P.O.	0	All died in less than 5–6 wks.	6 wks.
Magee and Barnes, 1956	6 rats	Albino	M & F	Incorporated into powder diet at level of 100 ppm.[325]	P.O.	0	Lived 9–14 wks	14 wks.
Magee and Barns, 1956	6 rats	Albino	M & F	Incorporated into powder diet at level of 50 ppm.[325]	P.O.	0		20 wks.
Magee, P. N., and Barnes, J. M., 1959.	11 rats			10 & 20 ppm. in diet for 102 wks	P.O.	Tumors[327]		102 wks.
Magee, P. N., and Barnes, J. M., 1959.	6 rats			5 ppm. in diet for 104 wks	P.O.	0		104 wks.
Magee, P. N., and Barnes, J. M., 1959.	6 rats			50 ppm. in diet for 4 wks	P.O.	0		At least 40 wks.
Magee, P. N., and Barnes, J. M., 1959.	11 rats			50 ppm. in diet for 8 and 12 wks	P.O.	Tumors[328]		At least 40 wks.
Magee, P. N., and Barnes, J. M., 1959.	6 rats			100 ppm. in diet for 1 wk	P.O.	0		At least 40 wks.
Magee, P. N., and Barnes, J. M., 1959.	16 rats			100 ppm. in diet for 2, 3 and 4 wks	P.O.	Tumors[329]		At least 40 wks.
Magee, P. N., and Barnes, J. M., 1959.	4 rats			200 ppm. in diet for 1 wk	P.O.	Tumors[330]		At least 47 wks.
Magee, P. N., and Barnes, J. M., 1959.	15 rats			30 mg./kg. once	P.O.	Tumors[331]		Over 2 yrs.

[324] Hepatic fibrosis.
[325] DMN solution in arachis oil; 10 ml./kg. of diet yielded required concentration.
[326] Primary hepatic tumors; 7 with metastasis: (4 pulmonary, 3 intra-abdominal).
[327] 7 with hepatic carcinomas.
[328] 5 with hepatic carcinomas; 2 with renal tumors (adenomas/adenocarcinomas).
[329] 1 with hepatic carcinoma; 10 with renal tumors (adenomas/adenocarcinomas).
[330] 4 with renal tumors (1 adenocarcinoma).
[331] 3 with renal tumors (2 adenomas in females).

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
148. DIMETHYLNITROSAMINE $(CH_3)_2N—NO$ (Continued)								
Zak, F. G., et al., 1960	78 rats	Sprague-Dawley.	M & F	125 ppm. in low choline diet for 79–224 d.	P.O	Tumors[332, 333].	57 at 79 d., 8 between 161–224 d.	224 d.
Zak, F. G., et al., 1960	13 rats[334]	Sprague-Dawley.	M & F	125 ppm. in low choline diet for 79–160 d.	P.O	Tumors[334]	11 at 79 d., 1 between 121–160 d.	160 d.
149. N,N-DIMETHYLSTEARAMIDE $CH_3(CH_2)_{16}CON(CH_3)_2$								
Walpole, A. L., et al., 1954	12 rats	Albino	6 āā	Total of 800 mg./100 g. in total of 5.0 ml./100 g. arachis oil[335] twice wkly. for 75 dosing d.	S. C. r. flank	Tumors[337, 338].	5 died from 643rd-733rd d.	733 d.
150. N,N-DIMETHYLURETHANE $(CH_3)_2NCOOC_2H_5$								
Berenblum, I., et al., 1959	19 mice	Swiss	M & F	12.5 mg. in liq. paraffin once, 4 d. subsequent treated with twice-wkly. skin applications of 5% soln. croton oil in liq. paraffin for 40 wks.	P.O	0[339, 255]	All sacrificed at 40 wks.	40 wks.
151. DI-N-OCTYL-TIN $(C_8H_{17})_2Sn$								
Meynier, D., 1957	10 rats—180 g.	Albino	M & F	0.005 mg. per kg. every other d. for 30 d.	Oral	0	100%	4 mos.
Meynier, D., 1957	10 rats—180 g.	Albino	M & F	0.002 mg. per kg. every other d. for 30 d.	I.P	0	100%	4 mos.
Meynier, D., 1957	10 rats—180 g.	Albino	M & F	0.005 mg. per kg. every other d. for 30 d.	I.P	0	100%	4 mos.
Meynier, D., 1957	10 rats—180 g.	Albino	M & F	0.01 mg. per kg. every other d. for 30 d.	I.P	0	80%	4 mos.
Meynier, D., 1957	10 mice—20 g.	Albino	M & F	0.002 mg. per kg. every other d. for 30 d.	I.P	0	100%	4 mos.
Meynier, D., 1957	10 mice—20 g.	Albino	M & F	0.005 mg. per kg. every other d. for 30 d.	I.P	0	100%	4 mos.
Meynier, D., 1957	10 mice—20 g.	Albino	M & F	0.01 mg. per kg. every other d. for 30 d.	I.P	0	60%	4 mos.
Meynier, D., 1957	10 rats—180 g.	Albino	M & F	0.002 mg. per kg. every other d. for 30 d.	P.O	0	100%	4 mos.

[255] 46 croton oil controls with 11 skin papillomas; 2 pulmonary adenomas.
[332] 16 with renal tumors (benign and cystic adenomas before 160 days); epithelial tumors (possible malignancy) after 160 days; 7 with multiple pulmonary tumors after 111 days; 30 with hepatic nodules (cystic).
[333] 33 untreated controls negative.
[334] Subtotal hepatectomy.
[335] 3 with kidney tumors (benign and cystic adenomas); 1 with multiple pulmonary tumor; 6 with hepatic nodules (cystic); 7 untreated controls negative.
[336] Sterilized (140° C. for 1 hour).
[337] 4 with sarcoma at injection site; 2 each sex; 1 otic sebaceous carcinoma (male); 1 orbital sarcoma (male); 1 uterine carcinoma.
[338] Of 19 arachis oil injection controls: 1 with sarcoma at injection site; 1 with fibroma at injection site; 4 with tumors, site not specified.
[339] 6/19 with papillomas, average 0.4 ± 0.1 tumor/mouse.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
151. DI-N-OCTYL-TIN $(C_8H_{17})_2Sn$ (Continued)								
Meynier, D., 1957	10 rats—180 g.	Albino	M & F	0.01 mg. per kg. every other d. for 30 d.	Oral	0	80%	4 mos.
Meynier, D., 1957	10 rats—180 g.	Albino	M & F	0.05 mg. per kg. every other d. for 30 d.	Oral	0	20%	4 mos.
Meynier, D., 1957	10 mice—20 g.	Albino	M & F	0.002 mg. per kg. every other d. for 30 d.	P.O	0	100%	4 mos.
Meynier, D., 1957	10 mice—20 g.	Albino	M & F	0.005 mg. per kg every other day for 30 d.	P.O	0	100%	4 mos.
Meynier, D., 1957	10 mice—20 g.	Albino	M & F	0.01 mg. per kg. every other d. for 30 d.	P.O	0	70%	4 mos.
Meynier, D., 1957	10 mice—20 g.	Albino	M & F	0.05 mg. per kg. every other d. for 30 d.	P.O	0	20%	4 mos.
152. DIPROPYLENE GLYCOL METHYL ETHER $CH_3CH(OCH_3)CH_2OCH_2CH(OCH_3)CH_3$								
Rowe, V. K., et al., 1954	27 rabbits		M	On adsorbent cotton pad, 1.0, 3.0 or 5.0 ml./kg. 5 d. per wk. for 3 mos.	Skin	0	7 died	90 d.
153. n-DODECANE $CH_3(CH_2)_{10}CH_3$								
Horton, W. A., et al., 1957	Mice	C3H		50 mg. 3 times wkly. for life span	Skin	0		Life span.
154. ETHANOLAMINE OLEATE $CH_3(CH_2)_7CH{=}CH(CH_2)_7COOH{\cdot}NH_2CH_2CH_2OH$								
Salaman, M. H., and Glendenning, O. M., 1957.	20 mice	"S" albino	M	0 1 ml. of 1.6% in dist. water given to 4 sites, in rotation, once a wk. for 24 wks.	Intradermal inj.	0[340]		At least 25 wks.
155. DL-ETHIONINE $CH_3CH_2SCH_2CH_2CH(NH_2)COOH$								
Loring, W. E., and Hartley, L. J., 1955	5 rats	Wistar-Albino		25 mg. 1 cc. normal saline every other d.	I.P.	0[341]		41 d.
Loring, W. E., and Hartley, L. J., 1955.	5 rats	Wistar-Albino		12.5 mg. in 0.5 cc. normal saline every other d.	I.P	0[341]		32 d.
Loring, W. E., and Hartley, L. J., 1955.	5 rats[47]	Wistar-Albino		12.5 mg. in 0.5 cc. normal saline every other d.	Intracardiac inj.	0[341]		32 d.
Alvizouri, M., and Warren, S., 1956.	30 rats	Slonaker	M & F	1 mg. in 2.5% aqueous soln. daily for 18 d.	I.P	0[342]	Killed at various intervals.	Up to 45 d.
Alvizouri, M., and Warren, S., 1956.	20 rats	Slonaker	M & F	0.5% in Purina Chow diet up to 15 d., 100–200 mg./rat/d.	P.O	0[342]	Killed at various intervals.	Up to 45 d.

[47] Young.
[340] 1 tumor at injection site, 1 week post-treatment.
[341] Lesions of pancreas, stomach and submaxillary glands.
[342] Pancreatic, renal, hepatic and testicular lesions.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
155. DL-ETHIONINE $CH_3CH_2SCH_2CH_2CH(NH_2)COOH$ (Continued)								
Alvizouri, M., and Warren, S., 1956.	60 rats	Wistar-White	M & F	0.5% in food given for (7) 14–18 d. periods; each interrupted by 15–30 d. rest period.	P.O	1[343]	2–4 killed at end of each period.	203–336 d.
Alvizouri, M., and Warren, S., 1956.	30 rats	Slonaker	M & F	0.5 mg. in 2.5% aqueous soln. daily for 18 d.	I.P	0[342]	Killed at various intervals	Up to 45 d.
Farber, E., et al. 1956	10 rats	White Wistar	5 M & 5 F	0.25% in basal diet for 8 mos., then fed stock diet for 2 mos.	P.O	Tumors[344]	All killed at 10 mos.	10 mos.
Farber, E., 1956	10 rats	Wistar	M & F	Incorporated into diet at level of 0.5%.	P.O	0[345]	Sacrificed at 30-d. intervals beginning at 60 d.	8–9 mos.
Farber, E., 1956	10 rats	Wistar	M & F	Incorporated into diet at level of 0.25%.	P.O	4 (liver tumors)[346]	Sacrificed at 30-d. intervals beginning at 60 d.	8–9 mos.
Farber, E., 1956	10 rats	Wistar	M & F	Incorporated into diet at level of 0.25%.	P.O	0	Sacrificed at wkly. intervals beginning at 7 d.	49 d.
Kaufman, N., et al., 1956	22 rats	Sprague-Dawley, Albino.		0.5% in high protein vitamin supplemented diet for 63 d.	P.O	0[347]		63 d.
Kaufman, N., et al., 1956	8 rats	Sprague-Dawley, Albino.		0.5% in high protein vitamin supplemented diet for 28 d., then fed basic diet for 35 d.	P.O	0[347]		63 d.
Kent, G., et al., 1957	45 rats	Sprague-Dawley	F	0.5% in diet for unspecified time, off for 10–193 d.	P.O	0[348]	Sacrificed at end of experiment.	At least 193 d.
Kent, G., et al., 1957	12 rats[228]	Sprague-Dawley	F	0.5% in diet for 25–172 d	P.O	0[348]	Sacrificed at 25–172 d.	172 d.
Kent, G., et al., 1957	40 rats	Sprague-Dawley	F	0.3% in diet for 71–337 d	P.O	0[348]	Sacrificed at 71–337 d.	337 d.
Kent, G., et al., 1957	120 rats	Sprague-Dawley	F	0.5% in diet for 70–729 d., alternating with untreated diet.	P.O	0[349]	Sacrificed at 70–729 d.	729 d.
Kent, G., et al., 1957	100 rats	Sprague-Dawley	F	0.5% in diet for 8–55 d	P.O	0[349]	Sacrificed at 8–55 d.	55 d.
Miyaji, H., et al., 1957	Rats	Albino	M	0.25% in diet for 6 wks	P.O	0	Killed at wkly intervals.	6 wks.
Miyaji, H., et al. 1957	Rats	Albino	M	0.25% in diet for 11 wks	P.O	0	Killed at wkly. intervals.	25 wks.
Miyaji, H., et al., 1957	Rats	Albino	M	0.25% in diet for 31 wks	P.O	Tumors[350]	Killed at wkly. intervals.	31 wks.

[228] Splenectomized.
[343] 1 cholangioma.
[344] 9 with multiple hepatic carcinomas, 5 with metastases (metastatic sites included lungs, omentum, pleura, mediastinum, pancreas, lymph nodes and abdomen).
[345] Study of liver lesions.
[346] Hepatic carcinoma in 4 treated 8–9 months (2 with abdominal metastases).
[347] Testicular degeneration.
[348] Hepatic lesions and splenic hyperplasia.
[349] Splenic cholangiofibrosis and hyperplasia.
[350] 19% with hepatomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
155. DL-ETHIONINE $CH_3CH_2SCH_2CH_2CH(NH_2)COOH$ (Continued)								
Farber, E., and Ichinose, H., 1958.	10 rats	Wistar white	M & F	0.25% in basal diet for 8 mos., then normal diet for 4 mos.	P.O	Tumors[351]	8 at 8 mos	12 mos.
Farber, E., and Ichinose, H., 1958.	10 rats	Wistar white	M & F	0.25% in basal diet for 8 mos., normal diet for 2 mos.	P.O	Tumors[352]	10 at 8 mos.	Up to 10 mos.
Farber, E., and Ichinose, H., 1958.	10 rats	Wistar white	M & F	0.25% in diet containing 0.3% dl-methionine for 8 mos., normal diet for 2 mos.	P.O	Tumors[352]	10 at 8 mos	Up to 10 mos.
Farber, E., and Ichinose, H., 1958.	10 rats	Wistar white	M & F	0.25% in diet containing 0.3% choline chloride for 8 mos., normal diet for 2 mos.	P.O	Tumors[354]	9 at 8 mos	Up to 10 mos.
Farber, E., and Ichinose, H., 1958.	10 rats	Wistar white	M & F	0.25% in basal diet for 4.5 mos., vitamin content 2.5 times greater than usual, then fed normal diet for 7.5 mos.	P.O	Tumors[355]	9 at 8 mos	Up to 12 mos.
Farber, E., and Ichinose, H., 1958.	10 rats	Wistar white	M & F	0.25% in diet containing 0.2% dl-methionine for 4.5 mos., vitamin content 2.5 times greater than usual, then fed normal diet for 7.5 mos.	P.O	Tumors[356]	8 at 8 mos	Up to 12 mos.
Farber, E., and Ichinose, H., 1958.	10 rats	Wistar white	M & F	0.25% in diet containing 0.6% dl-methionine for 4.5 mos., vitamin content 2.5 times greater than usual, then fed normal diet for 7.5 mos.	P.O	0[357]	10 at 8 mos.	Up to 12 mos.
Farber, E., and Ichinose, H., 1958.	10 rats	Wistar white	M & F	0.25% in diet containing 0.8% dl-methionine for 4.5 mos., vitamin content 2.5 times greater than usual, then fed normal diet for 7.5 mos.	P.O	0	10 at 8 mos.	Up to 12 mos.
Farber, E., and Ichinose, H., 1958.	10 rats	Wistar white	M & F	0.25% in diet containing 0.6% dl-methionine for 8 mos., then normal diet for 4 mos.	P.O	0[357]	9 at 8 mos	12 mos.
Farber, E., and Ichinose, H., 1958.	10 rats	Wistar white	M & F	0.25% in diet containing 0.8% dl-methionine for 8 mos., then normal diet for 4 mos.	P.O	0	9 at 8 mos	12 mos.
Farber, E., and Ichinose, H., 1958.	10 rats	Wistar white	M & F	0.25% in diet containing 0.6% choline chloride for 8 mos., then normal diet for 4 mos.	P.O	Tumors[358]	10 at 8 mos	12 mos.
Farber, E., and Ichinose, H., 1958.	10 rats	Wistar white	M & F	0.25% in diet containing 0.8% choline chloride for 8 mos., then normal diet for 4 mos.	P.O	Tumors[359]	10 at 8 mos	12 mos.

[351] 8 (100%) with hepatic carcinomas.
[352] 9 (90%) with hepatic carcinomas.
[353] 5 (50%) with hepatic carcinomas.
[354] 5 (56%) with hepatic carcinomas; pancreatic testicular lesions.
[355] 9 (100%) with hepatic carcinomas.
[355] 2 (25%) with hepatic carcinomas.
[357] Pancreatic and testicular lesions.
[358] 6 (60%) with hepatic carcinomas; pancreatic and testicular lesions.
[359] 7 (70%) with hepatic carcinoma; pancreatic and testicular lesions.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
155. DL-ETHIONINE $CH_3CH_2SCH_2CH_2CH(NH_2)COOH$ (Continued)								
Farber, E., and Ichinose, H., 1958.	10 rats	Wistar white	M & F	0.25% in diet containing 0.8% betaine chloride for 8 mos., then normal diet for 4 mos.	P.O	Tumors[360]	10 at 8 mos	12 mos.
Farber, E., and Ichinose, H., 1958.	Rats			0.25% in diet	P.O	0[361]		At least 2.5 mos.
Farber, E., and Ichinose, H., 1958.	Rats			0.25% in diet with DL-homocystine up to 4 mos.	P.O	0[362]		At least 4 mos.
Wang, C., et al., 1958	5 dogs	Mongrel	M	100 mg./kg. body wt. in 2.5% soln. in saline every other d. for 11–17 d.	I.P	0[363]		About 34 d.
Sorof, S., et al., 1958	Rats	Lankenau-Carworth-Wistar.	M & F	0.25% in semisynthetic diet for 8½ wks.	P.O	([364])		At least 8½ wks.
Stekol, J. A., et al., 1959	Rats	Wistar	F	0.25% in synthetic diet containing 24% casein.	P.O	Tumors[365]		
Stekol, J. A., et al., 1959	Rats	Wistar	F	0.25% in synthetic diet containing 8% casein.	P.O	0[366]	All died within 30–45 d.	Up to 45 d.
Wachstein, M., and Meisel, E., 1959.	120 rats	Wistar	M	0.5 g./100 g. diet	P.O	Tumors[367]	100 from 5–200 d., 20 from 216–330 d.	330 d.
156. ETHYL ALCOHOL C_2H_5OH								
Aragona, F., and Barone, P., 1953.	10 rats		M & F	40 ml. at 40° added to 100 gm. of diet. At 15° as drinking water.	P.O	0[368]	5 alive at 119 d	Up to 152 d.
Klatskin, G., et al., 1954	60 rats	Sprague-Dawley.	M	15% in the drinking water.[369]	P.O	0	47 at end of experiment.	226 d.
Mallov, S., 1955	Rats	Albino	M	1.52 & 1.9 g./rat/d. for 30 d., fed basal synthetic diet.	P.O. (stomach tube).	0[14]	All sacrificed	30 d.
Miyazaki, M., 1955	8 rats	Albino		10% in basal diet for 30 d., 20% for 30 more d.	P.O	0		60 d.
157. ETHYLCARBAMATE $NH_2—COOC_2H_5$								
Graffi, A., et al., 1953	250 mice		M	3 drops 5% in acetone once wkly. followed by 1 drop 5% croton oil in mineral oil once wkly.	Skin	Tumors[370]	19 at 12th mo	12 mos.
Perissinotto, B., 1953	10 mice	Albino	M & F	0.2 ml. of 8% water soln., thrice wkly. for 240 d.	I.P	Lung adenomas.[371]	Sacrificed at intervals.	240 d.

[14] No pathology given.
[360] 1 (10%) with hepatic carcinoma; pancreatic and testicular lesions.
[361] Hepatic nodules (0.5 cm. diameter).
[362] Hepatic nodules at 1 month (1.5–2 cm. diameter).
[363] Pancreatic and hepatic lesions (degenerative).
[364] Biochemical study.
[365] 100% with liver carcinoma (6–7 months).
[366] Hepatic and renal lesions.
[367] Hepatic nodules (3–4 months) 10/20 with hepatic carcinomas (some metastases) (8–11 months).
[368] Hepatitis and thyroid hypertrophy.
[369] Diet supplements and caloric intake varied.
[370] 12 skin tumors (1 carcinoma with metastasis).
[371] 15 turpentine vapor exposed controls negative.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
157. ETHYLCARBAMATE $NH_2—COOC_2H_5$ (Continued)								
Perissinotto, B., 1953	20 mice	Albino	M & F	0.2 ml. of 8% water soln., thrice wkly. for 240 d., then exposed to vapor of turpentine thrice wkly. from 121st to 240th d.	I.P	Lung adenomas.[371]	Sacrificed at intervals.	240 d.
Perissinotto, B., 1953	20 mice	Albino	M & F	0.2 ml. of 8% water soln., thrice wkly. for 120 d. followed by exposure to vapor of turpentine thrice wkly. for 120 d.	I.P	Lung adenomas.[371]	Sacrificed at intervals.	240 d.
Englehorn, R., 1954	9 rats	Albino		10 mg. as 3% oil soln	P.O	0	3 killed at 5th mo., 3 killed at 7th mo.	15 mos.
Klein, M. 1954	Mice[372]	Albino-related to Strain A.	M & F	25 mg. as a 10% soln. in dist. water once.	I.P	Tumors[373]		6 mos.
Klein, M., 1954	Mice[374]	Albino-related Strain A.	M	1 mg./gm. body wt. given as a 10% soln. in dist. water once.	I.P	Tumors[375]		6 mos.
Klein, M., 1954	Mice[372]	Albino-related to Strain A.	M & F	25 mg. as a 10% soln. in dist. water, once into pregnant females.	I.P	Tumors[378]	69 newborn	6 mos.
Klein, M., 1954	Mice[377]	Albino-Related to Strain A.	M & F	1 mg./gm. body wt. given as a 10% soln. in dist. water, once in pregnant female.	I.P	Tumors[378]	31 newborn	6 mos.
Roe and Salaman, 1954	20 mice	S	M & F	0.3 ml. of a 20% acetone soln., 3 times at 2 hr. intervals (total dose 180 mg.)[379].	Skin	Tumors[380]	18 at 22 wks.	22 wks.
Roe and Salaman, 1954	20 mice	S	M & F	0.3 ml. of a 16.6% acetone soln., once only (total dose 50 mg.)[379].	Skin	Tumors[381]	17 at 22 wks	22 wks.
Roe and Salaman, 1954	20 mice	S	M & F	0.3 ml. of a 3.3% acetone soln. once (total dose 10 mg.)[379].	Skin	Tumors[382]	18 at 22 wks	22 wks.
Roe and Salaman, 1954	18 mice	S	M & F	0.3 ml. of 0.7% in acetone once (total dose 2 mg.)[379].	Skin	Tumors[383]	18 at 22 wks	22 wks.
Roe and Salaman, 1954	20 mice	S	M	0.3 ml. of a 20% acetone soln., 3 times with 4 d. intervals (total dose 180 mg.)[379].	Skin	Tumors[384]	18 at 22 wks	22 wks.
Roe and Salaman, 1954	20 mice	S	M	0.3 ml. of 20% in Carbowax 300, 3 times with 4 d. intervals (total dose 180 mg.)[379].	Skin	Tumors[384]	20 at 22 wks	22 wks
Roe and Salaman, 1954	24 mice	S		0.3 ml. of a 20% acetone soln. twice with 15 min. interval on 1st and 8th d. (total dose 240 mg.)[379].	Skin	Tumors[385]	11 at 43 wks	43 wks.

[319] 14 skin tumors (5 carcinomas, 9 papillomas).
[371] 15 turpentine vapor exposed controls negative.
[372] Day 19 cesarean sections, 5 minutes post-injection.
[373] 82% with pulmonary tumors; average 5.6 tumors/lung.
[374] Age: 47 days.
[375] 100% with pulmonary tumors; average 23.4 tumors/lung.
[376] 100% pulmonary tumors; average 13.7 tumors/lung.
[377] Newborn.
[378] 100% with pulmonary tumors; average 9.2 tumors/lung.
[379] Plus 18 weekly applications of 0.3 ml. of 0.5% croton oil in acetone.
[380] 13 with 64 papillomas.
[381] 4 with 12 tumors.
[382] 5 with 8 tumors.
[383] 1 with 1 tumor.
[384] 18 with 70 tumors.
[385] 4 with 16 tumors; pulmonary adenomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
157. ETHYLCARBAMATE $NH_2—COOC_2H_5$ (Continued)								
Roe and Salaman, 1954	20 mice	S	M	0.3 ml. of a 20% acetone soln. wkly. for 18 wks. (total dose 1.08 gm.)[379].	Skin	Tumors[386]	8 at 39 wks	39 wks.
Scanu, A., and Gallo, B., 1954	10 cats			0.05–0.10 gr./Kg. body wt. water soln. daily.	S.C	0[387]	Only one alive at 29 d.	32 d.
Berenblum and Haran, 1955	20 mice[58]	Swiss	F	1 application of 40% soln. in ethylene glycol.[388]	Skin	No skin tumors[389].	16 at 10 wks	At least 39 wks.
Berenblum and Haran, 1955	20 mice[390]	Swiss	F	Twice wkly. applications of 40% soln. in ethylene glycol for 43 wks.	Skin	No skin tumors[391].		At least 43 wks.
Berenblum and Haran, 1955	20 mice[392]	Swiss	F	Twice wkly. applications of 40% soln. in ethylene glycol for period of 6 wks.[393]	Skin	No skin tumors[394].	17 alive at 16 wks	At least 45 wks.
Berenblum and Haran, 1955	20 mice[58]	Swiss	F	1 application of 40% soln. in ethylene glycol.[395]	Skin	No skin tumors[396].	All alive at 10 wks.	At least 39 wks.
Berenblum and Haran, 1955	20 mice[397]	Swiss	F	Twice wkly. applications of 40% soln. in ethylene glycol.[398]	Skin	10[399]	17 alive at 16 wks	At least 45 wks.
Burdette, W. J., 1955	79 mice[400]	A	28 F, 51 M	1 ml. recrystallized in 10% aqueous soln. per 100 g. body wt. at intervals of 7 d. for 14 wks. Treatment was started 2 wks. after transplantation.	I.P. inj	Tumors[401]	Few killed at monthly intervals.	1½ yrs.
Firth and Roe, 1955	23 mice	Albino "S" strain.	M	Susp. of adenoma-bearing lung tissue.[402]	16 inj. S.C., 8 inj. I.P.	2 lung adenomas.[403]	18 at 6 mos. (effective total of survivors).	6 mos.
Haraszti, A., and Kellner, B., 1955.	20 rats	White		70 mg./100 gm. body wt. as 10% aqueous soln. twice a wk. for 10 wks.	I.P	0	2 killed each wk	10 wks.
Kerenyi, N., and Rona, C., 1955.	15 guinea pigs.			0.5 g./Kg. of 10% aqueous soln. every other d.	I.P	0		At least 10 mos.
Kerenyi, N., and Rona, C., 1955.	10 dogs			0.5 g./Kg. in 10% aqueous soln. every other d.	I.P	0		2 mos.
Kerenyi, N., and Rona, C., 1955.	30 rabbits			0.5 g./Kg. body wt. in 10% aqueous soln. every other d.	I.P	0		More than 50 d.

[58] Age at start: 5 mos.
[379] Plus 18 weekly applications of 0.3 ml. of 0.5% croton oil in acetone.
[386] 7 with 36 tumors.
[387] Serum protein study; hepatic lesions.
[388] 70 semiweekly applications of 5% croton oil in liquid paraffin solution begun 4 weeks post-treatment.
[389] 2 with pulmonary adenomas; 2 with hepatic hemorrhage.
[390] Age at beginning: 3½ months.
[391] 14 with pulmonary adenomas; 6 with hepatic hemorrhage.
[392] Age at beginning: 4 months.
[393] 70 semi-weekly applications of liquid paraffin begun 4 weeks post-treatment.
[394] 9 with pulmonary adenomas; 1 with hepatic hemorrhage.
[395] 70 semi-weekly applications of liquid paraffin begun 4 weeks post-treatment.
[396] 2 with pulmonary adenomas; 12 with hepatic hemorrhage.
[397] Age at beginning: 4½ months.
[398] 70 semi-weekly applications of 5% croton oil in liquid paraffin solution begun 4 weeks post-treatment.
[399] 10 with 20 papillomas; 9 with pulmonary adenomas; 3 with hepatic hemorrhage.
[400] Subcutaneous transplant of bronchial tissue into right ear; pulmonary parenchyma into left ear.
[401] Pulmonary tumors in 6 ear grafts; 30/65 pulmonary adenomas.
[402] Donors pretreated with 3 to 18 applications of 0.3 ml. of 20% w/v solution of urethane in acetone (0.18 to 1.08 g.). Recipients received equivalent of 1 donor lung (up to 50% of adenomatous tissue) homogenized and suspended in Ringer's solution. Urethane treatment withheld from donors 10 weeks (min.) pre-sacrifice.
[403] Incidence within normal limits for age and strain.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
157. ETHYLCARBAMATE $NH_2—COOC_2H_5$ (Continued)								
Roe, F. J. C., 1955	20–30 mice	Albino	M	Applied on 4th & 7th d., then from 22nd d. on given 18 wkly. applications of croton oil.	Skin	Tumors[404]		At least 21 wks.
Rogers, S., 1955	7 mice	BALB/c		Fragments (0.2 mm. across) of lung tissue from 11 fetuses late in gestation hashed in Ringer's soln. and exposed to a 0.5% soln. of urethan in Ringer's soln.	I.M., posterior thigh muscle.	0	All sacrificed at end of experiment.	6 mos.
Rogers, S., 1955	5 mice	BALB/c		Fragments (0.2 mm across) of lung tissue from 9 fetuses late in gestation hashed in Ringer's soln. & exposed to a 0.5% soln. of urethan (in Ringer's soln. plus glucose and 1/3 rabbit serum) for 1.5 hrs.	I.M., posterior thigh muscle.	0	All sacrificed at end of experiment.	3 mos.
Rogers, S., 1955	10 young adult mice.	BALB/c		3 pregnant BALB/c mice were inj. I.P. with a 5% soln. of urethan in dist. water (1.5 mg./gm. of wt.). 1½ hrs. later the lungs of the fetuses were excised and hashed in Ringer's soln.	I.M., implant of lung tissue fragments, thigh muscle.	1 adenoma arising in the transplanted lung tissue.	7 early deaths in the total of 30 mice used in the 3 groups of the experiment.	11 wks.
Rogers, S., 1955	4 mice	A		Fragments (0.2 mm. across) of lung tissue from 9 fetuses late in gestation hashed in Ringer's soln. & then exposed to a 5.0% soln. of urethan in Ringer's soln. for ½ hr.	I.M., posterior thigh muscle.	0	All sacrificed at end of experiment.	3 mos.
Rogers, S., 1955	5 mice	A		Fragments (0.2 mm. across) of lung tissue from 10 fetuses in gestation hashed in Ringer's soln. & then exposed to a 0.5% soln. of urethan (in Ringer's soln. plus ⅓ mouse serum) for 24 hrs.	I.M., posterior thigh muscle.	0	All sacrificed at end of experiment.	2 mos.
Rogers, S., 1955	5 mice	BALB/c		Fragments (0.2 mm. across) of lung tissue from 11 fetuses late in gestation hashed in Ringer's soln. & then exposed to a 0.5% soln. of urethan (in Ringer's soln. plus glucose & ⅓ mouse serum) for 2 hrs.	I.M., posterior thigh muscle.	0	All sacrificed at end of experiment.	4 mos.
Rogers, S., 1955	5 mice	BALB/c		Fragments (0.2 mm. across) of lung tissue from 10 fetuses late in gestation hashed in Ringer's soln. & then exposed to a 0.5% soln. of urethan (in Ringer's soln. plus glucose & ⅓ rabbit serum) for 2 hrs.	I.M., posterior thigh muscle.	0	All sacrificed at end of experiment.	5 mos.
Rogers, S., 1955	8 mice	A		Fragments (0.2 mm. across) of lung tissue from fetuses late in gestation hashed in Ringer's soln. & exposed to a 0.5% soln. of urethan in Ringer's soln. for 1 hr.	Implant of tissue into posterior thigh muscle.	0	Sacrificed at end of experiment.	2 mos.

[404] Average 2.3 papillomas/survivor.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
157. ETHYLCARBAMATE $NH_2—COOC_2H_5$ (Continued)								
Rogers, S., 1955	10 mice	BALB/c		Fragments of lungs of 13 fetuses late in gestation which were exposed *in situ* to a 1.5% soln. of urethan (in Ringer's soln. plus glucose) for 2–3 hrs. by means of I.T. cannulation.	I.M., implant of tissue, posterior thigh muscle.	0	Sacrificed at intervals beginning at 6 mos.	12 mos.
Rogers, S., 1955	10 young adult mice.	BALB/c		3 pregnant BALB/c mice were inj. I.P. with a 5% soln. of urethan in dist. water (1.5 mg./g. of wt.). 3 hrs. later the lungs of the fetuses were excised and hashed in Ringer's soln.	I.M., implant of lung tissue fragments, thigh muscle.	1 adenoma arising in the transplanted lung tissue.	7 early deaths in the total of 30 mice used in the 3 groups of the experiment.	11 wks.
Rogers, S., 1955	10 young adult mice.	BALB/c		3 pregnant BALB/c mice were inj. I.P. with a 5% soln. of urethan in dist. water (1.5 mg./g. of wt.). 5 hrs. later the lungs of the fetuses were excised and hashed in Ringer's soln.	I.M., implant of lung tissue fragments, thigh muscle.	2 (adenomas arising in the transplanted lung tissue).	7 early deaths in the total of 30 mice used in the 3 groups of the experiment.	11 wks.
Rogers, S., 1955	13 mice	BALB/c		Fragments of lungs of 10 fetuses late in gestation which were exposed *in situ* to a 0.8% soln. of urethan (in Ringer's soln. plus glucose) for 2–3 hrs. by means of I.T. cannulation.	I.M., implant of tissue, posterior thigh muscle.	0	Sacrificed at intervals beginning at 4 mos.	12 mos.
Haran and Berenblum, 1956	25 mice	Swiss	F	0.3 ml. of 5% aqueous soln. once wkly, for 10 wks.[405] (15 mg. per dose).	P.O. (by stomach tube).	18 (Papillomas)[406,407].	22 at end of treatment.	At least 30 wks.
Haran and Berenblum, 1956	33 mice	Swiss	F	0.3 ml. of 5% aqueous soln. once[408] (15 mg.).	P.O. (by stomach tube).	27 (papillomas)[409,410].	31 at end of treatment.	At least 18½ wks.
Haran and Berenblum, 1956	30 mice	Swiss	F	0.3 ml. of 5% aqueous soln., once wkly. for 10 wks. (15 mg. per dose)[411].	P.O. (by stomach tube).	23 (papillomas)[412,413].	23 at end of treatment.	At least 20 wks.
Haran and Berenblum, 1956	37 mice	Swiss	F	0.3 ml. of 5% aqueous soln. once wkly., for 45 wks. (15 mg. per dose).	P.O. (by stomach tube).	Tumors[414]		At least 45 wks.
Klarner, P., 1956	10 mice	A		1 mg./g. body wt. first and 41st d. of experiment.	I.P	Tumors[415]	8 at 149 d	149 d.

[405] 36 semi-weekly applications of 5% croton oil in liquid paraffin solution begun 2 weeks post-treatment.
[406] Average 2 papillomas/animal.
[407] Average latent period: 8½ weeks (from commencement of secondary treatment).
[408] 36 semi-weekly applications of 5% croton oil in liquid paraffin solution begun 2 days post-treatment.
[409] Average 2.4 papillomas/animal.
[410] Average latent period: 9½ weeks (from commencement of secondary treatment).
[411] Treatment concurrent with semi-weekly application of 5% croton oil in liquid paraffin solution. Croton oil treatment continued additional 8 weeks.
[412] Average 12.0 papillomas/animal.
[413] Average latent period: 10 weeks.
[414] No papillomas (as opposed to results using "promoting" agent). Pulmonary adenomas at autopsy.
[415] 7 pulmonary tumors.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
157. ETHYLCARBAMATE $NH_2—COOC_2H_5$ (Continued)								
Berenblum and Haran-Ghera, 1957.	32 mice[416]	Swiss	M	0.4 ml. of 5% soln. in dist. water, wkly. for 3 wks. (Total dose 60 mg.)[417,418].	P.O., stomach tube.	5 (28%) (Pap. of the fore-stomach)[419].	18 alive at 10 wks.	51 wks.
Berenblum, I., and Haran-Ghera, N., 1957.	Mice	Swiss	M & F	25 mg. as 5% soln. in dist. water once.[420]	P.O., stomach tube.	Tumors[421, 422].	19 at end of experiment.	At least 26 wks.
Berenblum, I., and Haran-Ghera, N., 1957.	Mice	Swiss	M & F	25 mg. as 5% soln. in dist. water once[424].	P.O., stomach tube.	Tumors[422, 423].	20 at end of experiment.	At least 26 wks.
Berenblum, I., and Haran-Ghera, N., 1957.	Mice	Swiss	M & F	25 mg. as 5% soln. in dist. water once.[425]	P.P., stomach tube.	Tumors[422, 426].	40 at end of experiment.	At least 26 wks.
Berenblum, I., and Haran-Ghera, 1957.	Mice	Swiss	M & F	25 mg. as 5% soln. in dist. water once.[427]	P.O., stomach tube.	Tumors[422, 428].	38 at end of experiment.	At least 27 wks.
Berenblum, I., and Haran-Ghera, N., 1957.	Mice	Swiss	M & F	64 mg. as 5% soln. in dist. water once.[425]	P. O., stomach tube.	Tumors[429, 422].	24 at end of experiment.	At least 26 wks.
Berenblum, I., and Haran-Ghera, N., 1957.	Mice	Swiss	M & F	25 mg. as 5% soln. in dist. water once.[430]	P.O., stomach tube.	Tumors[422, 431].	20 at end of experiment.	At least 28 wks.
Berenblum, I., and Haran-Ghera, N., 1957.	Mice	Swiss	M & F	25 mg. as 5% soln. in dist. water once.[432]	P.O., stomach tube.	Tumors[422, 433].	37 at end of experiment.	At least 34 wks.
Berenblum, I., and Haran-Ghera, N., 1957.	Mice	Swiss	M & F	50 mg. as 5% soln. in dist. water once.[425]	S.C	Tumors[422, 434].	22 at end of experiment.	At least 26 wks.
Berenblum, I., and Haran-Ghera, N., 1957.	Mice	Swiss	M & F	50 mg. as 5% soln. in dist. water once.[432]	S.C	Tumors[435, 422].	20 at end of experiment.	At least 34 wks.
Berenblum, I., and Haran-Ghera, N., 1957.	Mice	Swiss	M & F	64 mg. as 5% soln. in dist. water once.[425]	P.O., stomach tube.	Tumors[436, 422].	24 at end of experiment.	At least 26 wks.
Berenblum, I., and Haran-Ghera, N., 1957.	Mice	Swiss	M & F	50 mg. as 5% soln. in dist. water once.[425]	S.C	Tumors[437, 422].	22 at end of experiment.	At least 26 wks.
Berenblum, I., and Haran-Ghera, N., 1957.	Mice	Swiss	M & F	50 mg. as 5% soln. in dist. water once.[425]	I.P	Tumors[438, 422].	28 at end of experiment.	At least 26 wks.

[416] Age: 3–3½ months.
[417] 45 weekly applications of 0.2 ml. of dilute acetic acid-acetate buffer (pH 2.4) begun 3 weeks post-treatment.
[418] Milk diet for 3 days followed by only water for 18 hours prior to first treatment; 18 hours of only water prior to subsequent treatments.
[419] Average 0.5±0.3 tumors/survivor (at 10 weeks).
[420] 52 semi-weekly applications of 5% croton oil in liquid paraffin solution begun 1 day post-treatment.
[421] 16 with papillomas (average 1.5/mouse). 13 with pulmonary adenomas (average 2.2/mouse).
[422] 2/20 croton oil controls with papillomas; 1/20 with pulmonary adenomas.
[423] 18 with papillomas; avg. 1.5 papillomas/mouse. 12 with pulmonary adenomas; avg. 1.5 adenomas/mouse.
[424] 52 semi-weekly applications of 5% croton oil in paraffin solution begun 2 days post-treatment.
[425] 52 semi-weekly applications of 5% croton oil in liquid paraffin solution begun 3 days post-treatment.
[426] 33 with papillomas; avg. 1.6/mouse. 34 pulmonary adenomas; avg. 2.7/mouse.
[427] 52 semi-weekly applications of 5% croton oil in liquid paraffin solution begun 7 days post-treatment.
[428] 36 with papillomas; avg. 2.4/mouse. 28 with pulmonary adenomas; avg. 2.3/mouse.
[429] 24 with papillomas; avg. 5.0/mouse. 24 with pulmonary adenomas; avg. 7.0/mouse.
[430] 40 semi-weekly applications of 5% croton oil in paraffin solution begun 2 weeks post-treatment.
[431] 18 with papillomas; avg. 2.4/mouse. 17 with pulmonary adenomas; avg. 2.4/mouse.
[432] 52 semi-weekly applications of 5% croton oil in paraffin solution begun 56 days post-treatment.
[433] 34 with papillomas; avg. 2.0/mouse. 35 with pulmonary adenomas; 4.8/mouse.
[434] 22 with papillomas; avg. 4.3/mouse. 22 with pulmonary adenomas; avg. 4.8/mouse.
[435] 16 with papillomas; avg. 2.3/mouse. 18 with pulmonary adenomas; avg. 3.7/mouse.
[436] 24 with papillomas; avg. 5.0/mouse. 24 with pulmonary adenomas; avg. 7.0/mouse.
[437] 22 with papillomas; avg. 4.3/mouse. 22 with pulmonary adenomas; avg. 4.8/mouse.
[438] 28 with papillomas; avg. 5.7/mouse. 26 with pulmonary adenomas; avg. 3.0/mouse.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
157. ETHYLCARBAMATE $NH_2—COOC_2H_5$ (Continued)								
Berenblum, I., and Haran-Ghera, N., 1957.	Mice	Swiss	M & F	40% in acetone twice wkly. for 2 wks.[439]	Skin	Tumors[440, 422].	28 at end of experiment.	At least 28 wks.
Berenblum, I., and Haran-Ghera, N., 1957.	Mice[441]	Swiss	M & F	40% in acetone twice wkly. for 2 wks.[439]	Skin	Tumors[422, 442].	29 at end of experiment.	At least 28 wks.
Berenblum, I., and Haran-Ghera, N., 1957.	Mice	Swiss	M & F	25 mg. as 5% soln. in dist. water once.[443]	P.O., stomach tube.	Tumors[422, 444].	20 at end of experiment.	At least 26 wks.
Berenblum, I., and Haran-Ghera, N., 1957.	Mice	Swiss	M & F	25 mg. as 5% soln. in dist. water once.[445]	P.O., stomach tube.	Tumors[446, 422].	20 at end of experiment.	At least 26 wks.
Berenblum, I., and Haran-Ghera, N., 1957.	Mice	Swiss	M & F	25 mg. as 5% soln. in dist. water once.[447]	P.O., stomach tube.	Tumors[448, 422].	19 at end of experiment.	At least 26 wks.
Berenblum, I., and Haran-Ghera, N., 1957.	Mice	Swiss	M & F	4 mg. as 5% soln. in dist. water once.[425]	P.O., stomach tube.	Tumors[422, 449].	14 at end of experiment.	At least 26 wks.
Berenblum, I., and Haran-Ghera, N., 1957.	Mice	Swiss	M & F	1 mg. as 5% soln. in dist. water once.[425]	P.O., stomach tube.	Tumors[422, 450].	24 at end of experiment.	At least 26 wks.
Berenblum, I., and Haran-Ghera, N., 1957.	Mice	Swiss	M & F	64 mg. as 5% soln. in dist. water once.[425]	P.O., stomach tube.	Tumors[422, 451].	24 at end of experiment.	At least 26 wks.
Berenblum. I., and Haran-Ghera, N., 1957.	Mice	Swiss	M & F	32 mg. as a 5% soln. in dist. water twice, ½ wk. apart.[425]	P.O., stomach tube.	Tumors[422, 452].	37 at end of treatment.	At least 26 wks.
Berenblum, I., and Haran-Ghera, N., 1957.	Mice	Swiss	M & F	13 mg. as 5% soln. in dist. water, 5 times at ½ wk. intervals.[425]	P.O., stomach tube.	Tumors[422, 453].	20 at end of experiment.	About 29 wks.
Berenblum I., and Haran-Ghera, N., 1957.	Mice	Swiss	M & F	3.2 mg. as 5% soln. in dist. water, 20 times at ½ wk. intervals.[425]	P.O., stomach tube.	Tumors[422, 454].	24 at end of experiment.	About 36 wks.
Berenblum, I., and Haran-Ghera, N., 1957.	27 mice[416]	Swiss	M	0.4 ml. of 10% soln. in dist. water, wkly. for 3 wks. (Total dose 120 mg.)[455, 418].	P.O., stomach tube.	9 (53%)[456] (pap. of the fore-stomach).	17 alive at 10 wks.	51 wks.
Berenblum. I., and Haran-Ghera, N., 1957.	29 mice[416]	Swiss	M	0.4 ml. of 5% soln. in dist. water, wkly. for 3 wks. (Total dose 60 mg.)[457].	P.O., stomach tube.	4 (16%)[458] (pap. of the fore-stomach).	25 alive at 10 wks.	51 wks.

[416] Age: 3–3½ months.
[118] Milk diet for 3 days followed by only water for 18 hours prior to first treatment; 18 hours of only water prior to subsequent treatments.
[422] 2/20 croton oil controls with papillomas, 1/20 with pulmonary adenomas.
[425] 52 semi-weekly applications of 5% croton oil in liquid paraffin solution begun 3 days post-treatment.
[439] 52 semi-weekly applications of 5% croton oil in paraffin solution begun 7 days post-treatment.
[440] 23 with papillomas; avg. 1.7/mouse. 25 with pulmonary adenomas; avg. 2.0/mouse.
[441] Protective plastic neck collars used.
[442] 22 with papillomas; avg. 1.0/mouse. 14 with pulmonary adenomas; avg. 0.6/mouse.
[443] 52 semi-weekly applications of 5% croton oil in paraffin solution begun 30 minutes post-treatment.
[444] 20 with papillomas; avg. 3.1/mouse. 17 with pulmonary adenomas; avg. 2.7/mouse.
[445] 52 semi-weekly applications of 5% croton oil in paraffin solution begun 3 hours post-treatment.
[446] 18 with papillomas; avg. 2.8/mouse. 16 with pulmonary adenomas; avg. 2.7/mouse.
[447] 52 semi-weekly applications of 5% croton oil in paraffin solution begun 5 hours post-treatment.
[448] 18 with papillomas; avg. 3.0/mouse. 15 with pulmonary adenomas; avg. 1.7/mouse.
[449] 6 with papillomas; avg. 0.4/mouse. 3 with pulmonary adenomas; avg. 0.3/mouse.
[450] 3 with papillomas; avg. 0.25/mouse. 4 with pulmonary adenomas; avg. 0.2/mouse.
[451] 24 with papillomas; avg. 5.0/mouse. 24 with pulmonary adenomas; avg. 7.0/mouse.
[452] 37 with papillomas; avg. 8.0/mouse. 36 with pulmonary adenomas; avg. 9.0/mouse.
[453] 17 with papillomas; avg. 2.6/mouse. 13 with pulmonary adenomas; avg. 1.7/mouse.
[454] 21 with papillomas; avg. 2.2/mouse. 20 with pulmonary adenomas; avg. 3.3/mouse.
[455] 45 weekly applications of 0.2 ml. of 0.4% iodoacetic acid in distilled water, begun 3 weeks post-treatment.
[456] Avg. of 1.2±0.3 tumors/survivor (10 weeks).
[457] Milk only for 3 days; then water without solid food for 18 hours, prior to initial treatment, 3 weeks after 3 primary treatments; distilled water only for 18 hours; weekly for 45 weeks.
[458] Avg. of 0.3±0.1 tumors/survivor (10 weeks).

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
157. ETHYLCARBAMATE $NH_2—COOC_2H_5$ (Continued)								
Berenblum, I., and Haran-Ghera, N., 1957.	37 mice[416]	Swiss	M	0.2 ml. of 5% soln. in dist. water, wkly. for 45 wks. (Total dose 450 mg.)[459].	P.O., stomach tube.	7 (19%)[460] (pap. of ofe fore-stomach).	All alive at 10 wks.	45 wks.
Berenblum, I., and Haran-Ghera, N., 1957.	24 mice[416]	Swiss	M	0.4 ml. of 10% soln. in dist. water, wkly. for 3 wks. (Total dose 120 mg.)[457].	P.O., stomach tube.	5 (31%)[460] (pap. of the fore-stomach).	16 alive at 10 wks.	51 wks.
Berenblum, I., and Haran-Ghera, N., 1957.	Mice	Swiss	M & F	16 mg. as 5% soln. in dist. water once.[425]	P.O., stomach tube.	Tumors[451, 422].	24 at end of experiment.	At least 26 wks.
Berenblum, I. and Haran-Ghera, N., 1957.	40 mice[418]	Swiss	M	0.2 ml. of 10% soln. in dist. water, wkly. for 45 wks. (Total dose, 900 mg.)[459].	P.O., stomach tube.	13 (43%)[452], (pap. of the fore-stomach).	30 alive at 10 wks.	45 wks.
Berenblum, I., and Haran-Ghera, N., 1957.	54 mice[416]	Swiss	M	0.4 ml. of 5% soln. in dist. water, wkly. for 3 wks. (Total dose 60 mg.)[416,455].	P.O. stomach tube.	7 (16%)[453] (pap. of the fore-stomach).	43 alive at 10 wks.	51 wks.
Berenblum, I., and Haran-Ghera, N., 1957.	43 mice[416]	Swiss	M	0.4 ml. of 5% soln. in dist. water, wkly. for 3 wks. (Total dose 60 mg.)[455,416].	P.O., stomach tube.	12 (28%)[454] (pap. of the fore-stomach).	All alive at 10 wks.	58 wks.
Klein, M., 1957	Mice	CAF1/JAX	M	0.01 ml. of 10% soln. in dist. water/g. body wt. 3 times a wk. for 6 wks.	I.P	Tumors[465]	Sacrificed at 1 yr	1 yr.
Parmeggiani, A., et al., 1957	8 rabbits			20% in acetone, painted on an 18×20 cm. area, 3 times wkly. for 22 wks. followed by croton oil (2.5% in olive oil) twice wkly. or Tween 60 daily for 75 d.	Skin	Tumors[466]	All died during croton oil or Tween 60 treatment.	Up to 33 wks.
Parmeggiani, A., et al., 1957	16 rabbits			20% in acetone, painted on a 14×14 cm. area, 3 times wkly. for 4 wks. followed by croton oil for 6 mos. or Tween 60 for 4.5 mos.	Skin	0	All alive at end of experiment.	Up to 7 mos.
Ritchie, A. C., 1957	20 mice	Swiss	F	0.3 ml. of 30 mg. as a 10% w/v soln. in dist. water once.[467]	I.P., skin	Tumors[468, 469].	16 at 200 d	375 d.

[415] Age, 3–3½ months.
[416] Milk diet for 3 days followed by only water for 18 hours prior to first treatment, 18 hours of only water prior to subsequent treatments.
[422] 2/20 croton oil controls with papillomas; 1/20 with pulmonary adenomas.
[425] 52 semi-weekly applications of 5% croton oil in liquid paraffin solution begun 3 days post-treatment.
[455] 45 weekly applications of 0.2 ml. of 0.4% iodoacetic acid in distilled water, begun 3 weeks post-treatment.
[459] Pre-treatment: water only for 18 hours.
[460] Avg. 0.3±0.09 tumors/survivor (10 weeks).
[451] 15 with papillomas; avg. 1.2/mouse. 18 with pulmonary adenomas; avg. 1.6/mouse.
[452] Avg. 1.0±0.3 tumors/survivor (10 weeks).
[453] Avg. 0.3±0.1 tumors/survivor (10 weeks).
[454] Avg. 0.4±0.1 tumors/survivor (10 weeks).
[455] Transplantable pulmonary adenomas.
[456] No tumors at end of urethane treatment. Regressing papillomas after 30 days.
[467] Bi-weekly application (for duration of experiment) of 5% croton oil in paraffin solution begun 31 days post-treatment.
[466] 21/50 papillomas regressed; 3 progressed to carcinomas. 49 croton oil controls developed 69 papillomas (17 regressed; 1 progressed to carcinoma); avg. number papillomas/survivor in experimental group approximately 3-fold that for controls.
[469] Only skin tumors reported.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
157. ETHYLCARBAMATE NH_2—$COOC_2H_5$ (Continued)								
Ritchie, A. C., 1957	30 mice	Swiss	F	0.3 ml. of 30 mg. as a 10% w/v soln. in dist. water once.[467]	I.P., skin	Tumors[469, 470]	28 at 200 d.	250 d.
Ritchie, A. C., 1957	20 mice	Swiss	F	0.3 ml. of 30 mg. as a 10% w/v soln. in dist. water once.	I.P	0[469]	16 at 200 d	250 d.
Ritchie, A. C., 1957	14 mice	Swiss	F	0.3 ml. of 30 mg. as a 10% w/v soln. in dist. water given on 0, 7, 14, 21, 60, 73, 80, 88 & 94 d. respectively.[467]	I.P	Tumors[469, 471]	6 at 150 d.	175 d.
Roe, F. J. C., 1957	Mice			Total dose 0.25–2.5 g. from 1–22 wks.	Skin	0[472]	67 at 28 wks	More than 28 wks.
Rogers, S., 1957	25 mice	Swiss		5% soln. in double dist. water once.[473]	S.C	Tumors[474]	19 at 7 wks	7 wks.
Rogers, S., 1957	25 mice	Swiss		5% soln. in double dist. water once.[476]	S.C	Tumors[476]	19 at 7 wks	7 wks.
Rogers, S., 1957	20 mice	C		5% soln. in double dist. water once.[477]	S.C	Tumors[478]	14 at 8 wks	8 wks.
Rogers, S., 1957	20 mice	C		5% soln. in double dist. water once.[479]	S.C	Tumors[480]	15 at 8 wks	8 wks.
Rogers, S., 1957	25 mice	Swiss		5% soln. in double dist. water once.[481]	S.C	Tumors[482]	19 at 8 wks	8 wks.
Rogers, S., 1957	25 mice	Swiss		5% soln. in double dist. water once.[483]	S.C	Tumors[484]	16 at 8 wks	8 wks.
Rogers, S., 1957	25 mice	Swiss		5% soln. in double dist. water once.[481]	S.C	Tumors[485]	19 at 8 wks	8 wks.
Rogers, S., 1957	25 mice	Swiss		5% soln. in double dist. water once.[486]	S.C	Tumors[487]	23 at 10 wks	10 wks.
Rogers, S., 1957	25 mice	Swiss		5% soln. in double dist. water once.[475]	S.C	Tumors[488]	23 at 10 wks	10 wks.
Rogers, S., 1957	25 mice	C		5% soln. in double dist. water once.[489]	S.C	Tumors[490]	22 at 8 wks	8 wks.

[487] Bi-weekly application (for duration of experiment) of 5% croton oil in paraffin solution begun 31 days post-treatment.
[469] Only skin tumors reported.
[470] 48/92 papillomas regressed. 19 croton oil controls developed 19 papillomas (3 regressed); avg. number papillomas/survivor in experimental group approximately 3-fold that for controls.
[471] 13/75 papillomas regressed. 49 croton oil controls developed 69 papillomas (17 regressed, 1 progressed to carcinoma); avg. number papillomas/survivor in experimental group exceeded that for controls.
[472] 32 hepatic lesions at 28 weeks. 11 deaths due to lesion hemorrhage.
[473] Simultaneous administration 5% isotonic NaCl-desoxyribonucleate, I.P.
[474] 13 with 19 pulmonary adenomas.
[475] Simultaneous administration of equal volume isotonic NaCl, I.P.
[476] 12 with 47 pulmonary adenomas.
[477] 2 doses of 5% isotonic NaCl-desoxyribonucleate, 24 hour interval, I.P.
[478] 2 with 2 pulmonary adenomas.
[479] 2 doses of equal volume isotonic NaCl, 24 hour interval, I.P.
[480] 5 with 10 pulmonary adenomas.
[481] 4 doses of equal volume isotonic NaCl, 24 hour intervals, I.P.
[482] 18 with 139 pulmonary adenomas.
[483] 4 doses of 0.0025% aminopterin in isotonic NaCl, 24 hour intervals, I.P.
[484] 14 with 44 pulmonary adenomas.
[485] 12 with 27 pulmonary adenomas.
[486] Simultaneous administration of 0.0025% aminopterin in isotonic NaCl, I.P.
[487] 23 with 311 pulmonary adenomas.
[488] 23 with 357 pulmonary adenomas.
[489] 5 doses 0.0025% aminopterin in isotonic NaCl, 24 hour intervals, I.P.
[490] 6 with 14 pulmonary adenomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
157. ETHYLCARBAMATE $NH_2—COOC_2H_5$ (Continued)								
Rogers, S., 1957	25 mice	C		5% soln. in double dist. water once.[491]	S.C	0	17 at 8 wks	8 wks.
Rogers, S., 1957	25 mice	C		5% soln. in double dist. water once.[492]	S.C	Tumors[493]	19 at 8 wks	8 wks.
Rogers, S., 1957	25 mice	C		5% soln. in double dist. water once.[483]	S.C	Tumors[494]	19 at 8 wks	8 wks.
Rogers, S., 1957	25 mice	C		5% soln. in double dist. water once.[495]	S.C	Tumors[496]	20 at 8 wks	8 wks.
Rogers, S., 1957	20 mice	Swiss		5% soln. in double dist. water once.[497]	S.C	Tumors[498]	19 at 8 wks	8 wks.
Rogers, S., 1957	25 mice	C		0.5 mg./g. mouse in double dist. water once.[475]	S.C	Tumors[499]	21 at 11 wks	11 wks.
Rogers, S., 1957	20 mice	C		5% soln. in double dist. water once.[475]	S.C	Tumors[500]	14 at 7 wks	7 wks.
Rogers, S., 1957	20 mice	C		5% soln. in double dist. water once.[501]	S.C	Tumors[502]	11 at 7 wks	7 wks.
Rogers, S., 1957	20 mice	C		5% soln. in double dist. water once.[479]	S.C	Tumors[503]	15 at 7 wks	7 wks.
Rogers, S., 1957	20 mice	Swiss		5% soln. in double dist. water once.[475]	S.C	Tumors[504]	17 at 12 wks	12 wks.
Rogers, S., 1957	20 mice	Swiss		5% soln. in double dist. water once.[497]	S.C	Tumors[505]	100%	12 wks.
Rogers, S., 1957	20 mice	Swiss		5% soln in double dist. water once.[475]	S.C	Tumors[505]	100%	8 wks.
Rogers, S., 1957	25 mice	A		5% soln. in double dist. water once.[475]	S.C	Tumors[507]	19 at 8 wks	8 wks.
Rogers, S., 1957	25 mice	A		5% soln. in double dist. water once.[475]	S.C	Tumors[508]	24 at 8 wks	8 wks.
Rogers, S., 1957	25 mice	A		5% soln. in double dist. water once.[475]	S.C	Tumors[509]	22 at 10 wks	10 wks.

[475] Simultaneous administration of equal volume isotonic NaCl, I.P.
[483] 4 doses of 0.0025% aminopterin in isotonic NaCl, 24 hour intervals, I.P.
[491] 5 doses of 0.0025% aminopterin in isotonic NaCl, and 2 of 5% isotonic NaCl-desoxyribonucleate, alternated 24 hour intervals, I.P.
[492] 7 doses of equal volume isotonic NaCl, 24 hour intervals, I.P.
[493] 3 with 4 pulmonary adenomas.
[494] 8 with 13 pulmonary adenomas.
[495] 4 doses of 0.0025% aminopterin in isotonic NaCl and 2 of 5% isotonic NaCl-desoxyribonucleate, alternated at 24 hour intervals, I.P.
[496] 7 with 9 pulmonary adenomas.
[497] Simultaneous administration of 1% calcium thymidylate-isotonic NaCl, I.P.
[498] 16 with 79 pulmonary adenomas.
[499] 8 with 11 pulmonary adenomas.
[500] 6 with 11 pulmonary adenomas.
[501] 2 doses of 2% cytidylic acid-isotonic NaCl, 24 hour interval, I.P.
[502] 5 with 7 pulmonary adenomas.
[503] 10 with 25 pulmonary adenomas.
[504] 17 with 309 pulmonary adenomas.
[505] 20 with 339 pulmonary adenomas.
[505] 18 with 101 pulmonary adenomas.
[507] 9 with 15 pulmonary adenomas.
[508] 14 with 30 pulmonary adenomas.
[509] 20 with 76 pulmonary adenomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
157. ETHYLCARBAMATE $NH_2—COOC_2H_5$ (Continued)								
Rogers, S., 1957	Mice[510]	A		Fragments of lung tissue of 12—1 wk. old fetuses hashed in Ringer's soln., $\frac{1}{3}$ was added to 1 cc. serum obtained from rabbits inj. with 1.5 mg. urethane/g. body wt. for 5 hrs., agitated for 1 hr., susp. in 2 cc. Ringer's and given in 0.2 cc. amts.	Implant of tissue in alternately opposite posterior thigh.	Tumors[511]	Sacrificed at 2 mos.	2 mos.
Rogers, S., 1957	20 mice	Swiss		5% soln. in double dist. water once.[483]	S.C	Tumors[512]	9 at 7 wks	7 wks.
Rogers, S., 1957	20 mice	Swiss		5% soln. in double dist. water once.[481]	S.C	Tumors[513]	100%	7 wks
Rogers, S., 1957	25 mice	Swiss		5% soln. in double dist. water once.[475]	S.C	Tumors[514]	16 at 8 wks	8 wks.
Rogers, S., 1957	25 mice	Swiss		5% soln. in double dist. water once.[483]	S.C	Tumors[515]	5 at 8 wks	8 wks.
Rogers, S., 1957	25 mice	Swiss		5% soln. in double dist. water once.[479]	S.C	Tumors[516]	24 at 7 wks	7 wks.
Rogers, S., 1957	25 mice	Swiss		5% soln. in double dist. water once.[517]	S.C	Tumors[518]	22 at 7 wks	7 wks.
Rogers, S., 1957	25 mice	Swiss		5% soln. in double dist. water once.[475]	S.C	Tumors[519]	20 at 7 wks	7 wks.
Rogers, S., 1957	30 mice	Swiss		5% soln. in double dist. water once.[520]	S.C	Tumors[521]	21 at 8 wks	8 wks.
Rogers, S., 1957	30 mice	Swiss		5% soln. in double dist. water once.[475]	S.C	Tumors[522]	26 at 8 wks	8 wks
Rogers, S., 1957	25 mice	C		5% soln. in double dist. water once.[523]	S.C	Tumors[524]	21 at 8 wks	8 wks.
Rogers, S., 1957	25 mice	C		5% soln. in double dist. water once.[479]	S.C	Tumors[525]	22 at 8 wks	8 wks.
Rogers, S., 1957	25 mice	C		5% soln. in double dist. water once.[523]	S.C	Tumors[526]	22 at 7 wks	7 wks.
Rogers, S., 1957	25 mice	Swiss		5% soln. in double dist. water once.[527]	S.C	Tumors[528]	23 at 7 wks	7 wks.

[475] Simultaneous administration of equal volume isotonic NaCl, I.P.
[479] 2 doses of equal volume isotonic NaCl, 24 hour interval, I.P.
[483] 4 doses of 0.0025% aminopterin in isotonic NaCl, 24 hour intervals, I.P.
[510] Young adult.
[511] 5 adenomas in implanted tissue.
[512] 8 with 48 pulmonary adenomas.
[513] 12 with 47 pulmonary adenomas.
[514] 14 with 31 pulmonary adenomas.
[515] 5 with 77 pulmonary adenomas.
[516] 16 with 54 pulmonary adenomas.
[517] Simultaneous administration of 0.75% 4-amino-5-imidazole carboxamide-isotonic NaCl, I.P.
[518] 15 with 31 pulmonary adenomas.
[519] 7 with 14 pulmonary adenomas.
[520] 5 doses of 0.5% 2,6-diaminopurine-isotonic NaCl, 24 hour intervals, I.P.
[521] 11 with 16 pulmonary adenomas.
[522] 13 with 17 pulmonary adenomas.
[523] 2 doses of 2% uridylic acid-isotonic NaCl, 24 hour interval, I.P.
[524] 10 with 12 pulmonary adenomas.
[525] 8 with 10 pulmonary adenomas.
[526] 8 with 12 pulmonary adenomas.
[527] 2 doses of 2% adenine-isotonic NaCl, 25 hour interval, I.P.
[528] 19 with 112 pulmonary adenomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
157. ETHYLCARBAMATE $NH_2—COOC_2H_5$ (Continued)								
Rogers, S., 1957	25 mice	Swiss		5% soln. in double dist. water once.[475]	S.C	Tumors[529]	19 at 9 wks	9 wks.
Rogers, S., 1957	25 mice	Swiss		5% soln. in double dist. water once.[530]	S.C	Tumors[531]	15 at 9 wks	9 wks.
Rogers, S., 1957	25 mice	Swiss		5% soln. in double dist. water once.[475]	S.C	Tumors[532]	25 at 8 wks	8 wks.
Rogers, S., 1957	25 mice	Swiss		5% soln. in double dist. water once.[533]	S.C	Tumors[534]	24 at 8 wks	8 wks.
Rogers, S., 1957	30 mice	Swiss		5% soln. in double dist. water once.[475]	S.C	Tumors[535]	27 at 8 wks	8 wks.
Rogers, S., 1957	25 mice	Swiss		5% soln. in double dist. water once.[536]	S.C	Tumors[537]	23 at 7 wks	7 wks.
Rogers, S., 1957	25 mice	Swiss		5% soln. in double dist. water once.[475]	S.C	Tumors[538]	22 at 7 wks	7 wks.
Rogers, S., 1957	25 mice	C		5% soln. in double dist. water once.[479]	S.C	Tumors[539]	18 at 8 wks	8 wks.
Rogers, S., 1957	25 mice	Swiss		5% soln. in double dist. water once.[475]	S.C	Tumors[540]	21 at 10 wks	10 wks.
Rogers, S., 1957	70 mice	Swiss		5% soln. in double dist. water once.[541]	S.C	Tumors[542]	49 at 7 wks	7 wks.
Rogers, S., 1957	30 mice	Swiss		5% soln. in double dist. water once.[541]	S.C	Tumors[543]	27 at 8 wks	8 wks.
Rogers, S., 1957	70 mice	Swiss		5% soln. in double dist. water once.[475]	S.C	Tumors[544]	51 at 7 wks	7 wks.
Rogers, S., 1957	30 mice	Swiss		5% soln. in double dist. water once.[545]	S.C	Tumors[546]	24 at 8 wks	8 wks.
Rogers, S., 1957	25 mice	A		5% soln. in double dist. water once.[547]	S.C	Tumors[548]	24 at 9 wks	9 wks.
Rogers, S., 1957	25 mice	A		5% soln. in double dist. water once.[475]	S.C	Tumors[549]	24 at 9 wks	9 wks.

[475] Simultaneous administration of equal volume isotonic NaCl, I.P.
[479] 2 doses of equal volume isotonic NaCl, 24 hour interval, I.P.
[529] 14 with 63 pulmonary adenomas.
[530] Simultaneous administration of 2% cytosine-isotonic NaCl, I.P.
[531] 11 with 48 pulmonary adenomas.
[532] 16 with 38 pulmonary adenomas.
[533] Simultaneous administration of 2% 5-methylcytosine-isotonic NaCl, I.P.
[534] 10 with 26 pulmonary adenomas.
[535] 19 with 81 pulmonary adenomas.
[536] Simultaneous administration of 1% ureiodosuccinic acid in isotonic NaCl, I.P.
[537] 12 with 31 pulmonary adenomas.
[538] 11 with 29 pulmonary adenomas.
[539] 7 with 12 pulmonary adenomas.
[540] 19 with 63 pulmonary adenomas.
[541] Simultaneous administration of 2% thymine-isotonic NaCl, I.P.
[542] 23 with 56 pulmonary adenomas.
[543] 19 with 60 pulmonary adenomas.
[544] 32 with 90 pulmonary adenomas.
[545] Simultaneous administration of 2% uracil in isotonic NaCl, I.P.
[545] 14 with 64 pulmonary adenomas.
[547] Simultaneous administration of 1% uridine-5-phosphate in isotonic NaCl, I.P.
[548] 15 with 31 pulmonary adenomas.
[549] 14 with 29 pulmonary adenomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
157. ETHYLCARBAMATE $NH_2—COOC_2H_5$ (Continued)								
Rogers, S., 1957	30 mice	Swiss		5% soln. in double dist. water once.[550]	S.C	Tumors[551]	26 at 9 wks	9 wks.
Rogers, S., 1957	30 mice	Swiss		5% soln. in double dist. water once.[475]	S.C	Tumors[549]	27 at 9 wks	9 wks.
Rogers, S., 1957	25 mice	C		5% soln. in double dist. water once.[475]	S.C	Tumors[500]	21 at 7 wks	7 wks.
Rogers, S., 1957	25 mice	Swiss		5% soln. in double dist. water once.[552]	S.C	Tumors[553]	20 at 8 wks	8 wks.
Rogers, S., 1957	25 mice	Swiss		5% soln. in double dist. water once.[475]	S.C	Tumors[554]	21 at 8 wks	8 wks.
Rogers, S., 1957	20 mice	C		5% soln. in double dist. water once.[552]	S.C	Tumors[555]	13 at 7 wks	7 wks.
Rogers, S., 1957	30 mice	Swiss		5% soln. in double dist. water once.[530]	S.C	Tumors[556]	27 at 7 wks	7 wks.
Rogers, S., 1957	30 mice	Swiss		5% soln. in double dist. water once.[475]	S.C	Tumors[557]	27 at 7 wks	7 wks.
Rogers, S., 1957	25 mice	C		5% soln. in double dist. water once.[558]	S.C	Tumors[559]	17 at 8 wks	8 wks.
Rogers, S., 1957	25 mice	C		5% soln. in double dist. water once.[479]	S.C	Tumors[560]	21 at 8 wks	8 wks.
Rogers, S., 1957	25 mice	C		0.5 mg./g. mouse in double dist. water once.[558]	S.C	0	13 at 7 wks	7 wks.
Rogers, S., 1957	25 mice	C		0.5 mg./g. mouse in double dist. water once.[479]	S.C	Tumors[561]	19 at 7 wks	7 wks.
Rogers, S., 1957	25 mice	Swiss		5% soln. in double dist. water once.[552]	S.C	Tumors[563]	21 at 9 wks	9 wks.
Rogers, S., 1957	25 mice	Swiss		5% soln. in double dist. water once.[479]	S.C	Tumors[564]	20 at 9 wks	9 wks.
Asari, S., Acta Path. Jap. *8*, 27–43 (1958).	70 mice	d-d strain		0.1% in water	P.O	Tumors[5404]		10 wks.
Freedlander, B. L., and French, F. A., 1958.	30 mice	A		1.0 mg./g. once given complete diet	I.P	Tumors[555, 565].	All sacrificed at 4 mos.	4 mos.

[475] Simultaneous administration of equal volume isotonic NaCl, I.P.
[479] 2 doses of equal volume isotonic NaCl, 24 hour interval, I.P.
[500] 6 with 11 pulmonary adenomas.
[530] Simultaneous administration of 2% cytosine-isotonic NaCl, I.P.
[549] 14 with 29 pulmonary adenomas.
[550] Simultaneous administration of 2% desoxycytidylic acid in isotonic NaCl, I.P.
[551] 25 with 404 pulmonary adenomas.
[552] Simultaneous administration of 2% cytidylic acid in isotonic NaCl, I.P.
[553] 19 with 68 pulmonary adenomas.
[554] 17 with 126 pulmonary adenomas.
[555] 4 with 6 pulmonary adenomas.
[556] 19 with 93 pulmonary adenomas.
[557] 23 with 88 pulmonary adenomas.
[558] 2 doses of 1% orotic acid in isotonic NaCl, 24 hour interval, I.P.
[559] 5 with 9 pulmonary adenomas.
[560] 10 with 20 pulmonary adenomas.
[561] 6 with 9 pulmonary adenomas.
[562] 2 doses of 2% guanine in isotonic NaCl, 24 hour interval, I.P.
[563] 14 with 55 pulmonary adenomas.
[564] 16 with 58 pulmonary adenomas.
[565] Avg. 10.8 pulmonary adenomas/mouse.
[556] 33% of 70 untreated controls developed pulmonary adenomas.
[5404] Pulmonary.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
157. ETHYLCARBAMATE $NH_2—COOC_2H_5$ (Continued)								
Freedlander, B. L., and French, F. A., 1958.	30 mice	A		1.0 mg./g. once given niacin deficient diet 2 wks. prior & maintained throughout experiment.	I.P	Tumors[567, 568].	All sacrificed at 4 mos.	4 mos.
Kawamoto, S., et al., 1958	Mice	C57BL	M	1 mg./g. body wt. in 10% aqueous soln.	I.P	0[569]		250 d. or more, animal still living.
Kawamoto, S., et al., 1958	Mice	DBA/2	M	1 mg./g. body wt. in 10% aqueous soln.	I.P	0[569]		About 400 d.
Kawamoto, S., et al., 1958	Mice[198]	C57BL		1 mg./g. body wt. in 10% aqueous soln.	I.P	0[569]		About 350 d.
Kawamoto, S., et al., 1958	Mice	BALB/C	M & F	1 mg./g. body wt. in 10% aqueous soln.	I.P	0[569]		About 300 d.
Kawamoto, S., et al., 1958	Mice	DBA/2	M & F	1 mg./g. body wt. in 10% aqueous soln.	I.P	0[569]		About 300 d.
Kawamoto, S., et al., 1958	Mice	C57BL	M & F	1 mg./g. body wt. in 10% aqueous soln.	I.P	0[569]		About 450 d.
Medvedev, N. N., Doklady Akad. Nauk SSSR, Biol. Sect. *119*, No. 3, 594–7 (1958).	78 mice[5405]	C57 white C57 Brown C57 Black.		10% in saline, 0.18 to 0.26 ml. per mouse, single inj.	I.P	Tumors[5405]		19 wks.
Tannenbaum, A., and Silverstone, H., 1958.	50 mice	C57BL x C3H F_1.	25 ♂♂	3 drops (12 mg.) of 20% soln. in redistilled acetone twice wkly. for 78 wks.	Skin, interscapular region.	Tumors[570, 571].		21 mos.
Tannenbaum, A., and Silverstone, H., 1958.	50 mice	C57BLx C3HF_1.	25 ♂♂	3 drops (12 mg.) of 20% soln. in redistilled acetone twice wkly. for 26 wks.	Skin, interscapular region.	Tumors[572, 571].		21 mos.
Tannenbaum, A., and Silverstone, H., 1958.	29 mice	DBA	F	3 drops (12 mg.) of 20% soln. in redistilled acetone twice wkly. for 70 wks.	Skin, interscapular region.	Tumors[574, 573].		20 mos.
Tannenbaum, A., and Silverstone, H., 1958.	20 mice	C3H	F	3 drops (12 mg.) of 20% soln. in redistilled acetone twice wkly. for 60 wks.	Skin, interscapular region.	Tumors[575, 576].		14 mos.

[567] Avg. 18.8 pulmonary adenomas/mouse.
[568] 47% of 70 untreated controls developed pulmonary adenomas.
[569] Leukemia study only.
[570] 6 with mammary adenocarcinoma; 1 with mammary fibroadenoma (avg. 64.4 weeks); 17 with hemorrhagic cysts of interscapular fat pad (6 were malignant mesenchymal tumors); 26 with pulmonary adenomas; 38 with hepatic hemorrhagic cysts; 9 with intraorbital lesions (3 were multilocular cystadenomas).
[571] 5/50 semi-weekly acetone application controls (males) developed pulmonary adenomas.
[572] 3 with mammary tumors (avg. 89.0 weeks); 10 with hemorrhagic cysts of interscapular fat pad (3 were malignant mesenchymal tumors); 28 with pulmonary adenomas; 37 with hepatic hemorrhagic cysts; 6 with intraorbital lesions (1 was multilocular cystadenoma).
[573] 12 mammary carcinomas (avg. 60.7 weeks); 12 with hemorrhagic cysts of interscapular fat pad (2 were malignant mesenchymal tumors); 9 pulmonary adenomas; 13 hepatic hemorrhagic cysts.
[574] 8/30 140 semi-weekly acetone application female controls; 8 mammary carcinomas (avg. 70.1 weeks).
[575] 20 with mammary carcinomas (avg. 45.7 weeks); 2 with hemorrhagic cysts of interscapular fat pad (1 was malignant mesenchymal tumor); 6 pulmonary adenomas; 8 hepatic hemorrhagic cysts.
[576] 20 120 semi-weekly acetone application female controls developed mammary carcinomas (avg. 46.8 weeks).
[5405] Killed at 49–133 days.
[5406] Pulmonary.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
157. ETHYLCARBAMATE $NH_2—COOC_2H_5$ (Continued)								
van Esch, G. J., et al., 1958	30 mice	Swiss	15 F & M	0.1% in diet for 6 mos., simultaneously given skin applications of 5% croton oil soln. in oilve oil twice wkly. for 54 doses.	P.O	20[577,578]	22 at 6 mos	16 mos.
van Esch, G. J., et al., 1958	30 mice	Swiss	15 F & M	15 mg. in 1% tragacanth soln. once wkly. for 10 wks.[579]	P.O., stomach tube.	26[580,578]	27 at 6 mos	16 mos.
van Esch, G. J., et al., 1958	30 mice	Swiss	15 F & M	0.1% in diet for 6 mos., simultaneously given skin applications of 100% Tween 60 soln. in olive oil 6 times/wk. for 161 doses.	P.O	20[581,582]	24 at 6 mos	16 mos.
van Esch, G. J., et al., 1958	30 mice	Swiss	15 F & M	15 mg. in 1% tragacanth soln. once wkly. for 10 wks.[583]	P.O., stomach tube.	24[582,584]	28 at 6 mos	16 mos.
van Esch, G. J., et al., 1958	30 mice	Swiss	15 F & M	15 mg. in 1% tragacanth soln. once.[583]	P.O., stomach tube.	3[582,585]	24 at 6 mos	16 mos.
van Esch, G. J., et al., 1958	30 mice	Swiss	15 F & M	15 mg. in 1% tragacanth soln. once.[579]	P.O., stomach tube.	15[578,586]	28 at 6 mos	16 mos.
Berenblum, I., et al., 1959	30 mice	Swiss	M & F	10 mg. in saline soln. once, 4 d. subsequent treated with twice-wkly. skin applications of 5% soln. croton oil in liquid paraffin for 40 wks.	I.P	Tumors[255,587].	All sacrificed at 40 wks.	40 wks.
Berenblum, I., et al., 1959	20 mice	Swiss	M & F	25 mg. as aqueous soln. once, 4 d. subsequent treated with twice-wkly. skin applications of 5% soln. croton oil in liq. paraffin for 40 wks.	P.O	Tumors[255,588].	All sacrificed at 40 wks.	40 wks.
Berenblum, I., et al., 1959	Mice	Swiss	M	20 mg. as 10% soln. in dist. water once.[589]	I.P	Tumors[590]	All sacrificed at 22 wks.	22 wks.
Berenblum, I., et al., 1959	Mice	Swiss	M & F	20 mg. as 10% soln. in dist. water once.[589]	I.P	Tumors[591]	All sacrificed at 22 wks.	22 wks.
Berenblum, I., et al., 1959	Mice	Swiss	F	20 mg. as 10% soln. in dist. water once.[589]	I.P	Tumors[592]	All sacrificed at 22 wks.	22 wks.

[255] 46 croton oil controls with 11 skin papillomas; 2 pulmonary adenomas.
[577] Papillomas at 6 months (avg. 7.1 papillomas/mouse); additional papillomas developed up to 16 months (some progressed to carcinomas and sarcomas).
[578] Of 30 croton oil controls: 1 papilloma.
[579] 54 semi-weekly skin applications of 5% croton oil in olive oil solution begun 3 days post-treatment.
[580] Papillomas at 6 months (avg. 10.2 papillomas/mouse. Additional papillomas developed up to 16 months (some progressed to carcinomas and sarcomas).
[581] Papillomas at 6 months (avg. 2.3 papillomas/mouse). Additional papillomas developed up to 16 months (some progressed to carcinomas and sarcomas).
[582] Of 30 Tween 60 controls: 1 papilloma.
[583] 161 applications (6 per week) of 100% Tween 60 solution in olive oil given 6 times in week for 161 doses.
[584] Papillomas at 6 months (avg. 4.4 papillomas/mouse. Additional papillomas developed up to 16 months (some progressed to carcinomas and sarcomas).
[585] Papillomas at 6 months (avg. 1.7 papillomas/mouse. Additional papillomas developed up to 16 months (some progressed to carcinomas and sarcomas).
[586] Papillomas at 6 months (avg. 2.0 papillomas/mouse). Additional papillomas developed up to 16 months (some progressed to carcinomas and sarcomas).
[587] 18/30 with papillomas (avg. 0.9±0.2 tumors/mouse). 23/26 with pulmonary adenomas (avg. 2.8±0.5 tumors/mouse).
[588] 16/18 with papillomas (avg. 1.6±0.3 tumors/mouse). 12/18 with pulmonary adenomas (avg. 3.4±1.3 tumors/mouse).
[589] Two semi-weekly applications of 5% croton oil in paraffin begun 14 days post-treatment.
[590] 9/12 with papillomas (avg. latent period 10 weeks). 12/12 with pulmonary adenomas.
[591] 32/37 with papillomas (avg. latent period 11 weeks). 35/35 with pulmonary adenomas.
[592] 23/25 with papillomas (avg. latent period 11 weeks). 23/23 with pulmonary adenomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
157. ETHYLCARBAMATE $NH_2—COOC_2H_5$ (Continued)								
DiPaolo, J. A., 1959	25 mice	Strong A	M & F	0.01 ml. of 0.01 mg./g. body wt. in dist. water once, immediately exposed for 48 hrs. to 20% oxygen.	Inj	Tumors[593, 594].	All sacrificed at 3 mos.	3 mos.
DiPaolo, J. A., 1959	23 mice	Strong A	M & F	0.01 ml. of 1.0 mg./g. body wt. in dist. water once, immediately exposed for 48 hrs. to 10% oxygen.	Inj	Tumors[594, 595].	All sacrificed at 3 mos.	3 mos.
DiPaolo, J. A., 1959	23 mice	Strong A	M & F	0.01 ml. of 1.0 mg./g. body wt. in dist. water once, immediately exposed for 48 hrs. to 70% oxygen.	Inj	Tumors[596, 597].	All sacrificed at 3 mos.	3 mos.
DiPaolo, J. A., 1959	23 mice	Strong A	M & F	0.01 ml. of 1.0 mg./g. body wt. in dist. water once, immediately exposed for 48 hrs. to 20% oxygen.	Inj	Tumors[598, 594].	All sacrificed at 3 mos.	3 mos.
DiPaolo, J. A., 1959	25 mice	Strong A	M & F	0.01 ml. of 0.01 mg./g. body wt. in dist. water once, immediately exposed for 48 hrs. to compressed air (20.5%).	Inj	Tumors[594, 599].	All sacrificed at 3 mos.	3 mos.
DiPaolo, J. A., 1959	25 mice	Strong A	M & F	0.01 ml. of 0.1 mg./g. body wt. in dist. water once, immediately exposed for 48 hrs. to compressed air.	Inj	Tumors[594, 600].	All sacrificed at 3 mos.	3 mos.
DiPaolo, J. A., 1959	25 mice	Strong A	M & F	0.01 ml. of 0.01 mg./g. body wt. in dist. water once, immediately exposed for 48 hrs. to 70% oxygen.	Inj	Tumors[601, 597].	All sacrificed at 3 mos.	3 mos.
DiPaolo, J. A., 1959	24 mice	Strong A	M & F	0.01 ml. of 1.0 mg./g. body wt. in dist. water once, immediately exposed for 48 hrs. to compressed air.	Inj	Tumors[602, 594].	All sacrificed at 3 mos.	3 mos.
DiPaolo, J. A., 1959	20 mice	Strong A	M & F	0.01 ml. of 0.1 mg./g. body wt. in dist. water once, immediately exposed for 48 hrs. to 70% oxygen.	Inj	Tumors[597, 603].	All sacrificed at 3 mos.	3 mos.
DiPaolo, J. A., 1959	22 mice	Strong A	M & F	0.01 ml. of 0.1 mg./g. body wt. in dist. water once, immediately exposed for 48 hrs., to 20% oxygen.	Inj	Tumors[594, 604].	All sacrificed at 3 mos.	3 mos.
DiPaolo, J. A., 1959	22 mice	Strong A	M & F	0.01 ml. of 0.1 mg./g. body wt. in dist. water once, immediately exposed for 48 hrs. to 10% oxygen.	Inj	Tumors[605, 594].	All sacrificed at 3 mos.	3 mos.
DiPaolo, J. A., 1959	25 mice	Strong A	M & F	0.01 ml. of 0.01 mg./g. body wt. in dist. water once, immediately exposed for 48 hrs. to 10% oxygen.	Inj	Tumors[606, 594].	All sacrificed at 3 mos.	3 mos.

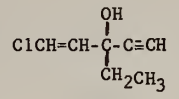
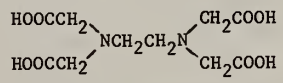
[593] Avg. 0.32±0.12 pulmonary adenomas/mouse.
[594] 2/25 compressed-air controls developed single tumors.
[595] Avg. 10.0±1.05 pulmonary adenomas/mouse.
[596] Avg. 17.8±1.05 pulmonary adenomas/mouse.
[597] 1/25 saline and 70% oxygen developed single tumor.
[598] Avg. 12.8±1.05 pulmonary adenomas/mouse.
[599] Avg. 0.44±0.12 pulmonary adenomas/mouse.
[600] Avg. 1.28±0.22 pulmonary adenomas/mouse.
[601] Avg. 0.48±0.12 pulmonary adenomas/mouse.
[602] Avg. 13.0±1.05 pulmonary adenomas/mouse.
[603] Avg. 1.35±0.22 pulmonary adenomas/mouse.
[604] Avg. 0.82±0.22 pulmonary adenomas/mouse.
[605] Avg. 0.90±0.22 pulmonary adenomas/mouse.
[606] Avg. 0.24±0.12 pulmonary adenomas/mouse.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
157. ETHYLCARBAMATE $NH_2—COOC_2H_5$ (Continued)								
Kawamoto, S., et al., 1959	28 mice	Cb	M	1 mg./g. body wt. at 4 d. intervals	I.P	Tumors [607]	Died early	
Kawamoto, S., et al., 1959	30 mice	DBA/2	M	1 mg./g. body wt. at 4 d. intervals for total 4 doses.	I.P	Tumors [608]		
Kawamoto, S., et al., 1959	43 mice	C57B1	21 M & 22F	1 mg./g. body wt. at 4 d. intervals for total 11 doses.	I.P	Tumors [609]		
Mori-Chavez, P., 1959	Mice	A		0.25, 0.5 & 1.0 mg./g. body wt. once for each dose level.	I.P	Tumors [610]		Up to 60 wks.
Berenblum, I., et al., 1960	Mice[611]	Swiss	M & F	2.2 mg. once, followed 1 d. later by twice wkly. applications of 5% croton oil in liq. paraffin for 20 wks.	Inj	Tumors[612, 613].	All sacrificed at 20 wks.	20 wks.
Berenblum, I., et al., 1960	Mice[611]	Swiss	M & F	4.4 mg once, followed 1 d. later by twice wkly. skin applications of 5% croton oil in liq. paraffin for 20 wks.	Inj	Tumors[613, 614].	All sacrificed at 20 wks.	20 wks.
Berenblum, I., et al., 1960	Mice[611]	Swiss	M & F	1.1 mg. once, followed 1 d. later with twice wkly. skin applications of 5% croton oil in liq. paraffin for 20 wks.	Inj	0[613, 616]	All sacrificed at 20 wks.	20 wks.
Heston, W. E., et al., 1960	95 mice	C3H	M	20 mg. in 0.5 cc. of water once	Inj	Tumors[616, 617].	All sacrificed at 12 mos.	Up to 12 mos.
Heston, W. E., et al., 1960	70 mice	C3He	M	20 mg. in 0.5 cc. of water once wkly. for 8 wks.	Inj	Tumors[618, 619].	All sacrificed at 12 mos.	Up to 12 mos.
Heston, W. E., et al., 1960	73 mice	C3He	M	20 mg. in 0.5 cc. of water once	Inj	Tumors[619, 620].	All sacrificed at 12 mos.	Up to 12 mos.
Heston, W. E., et al., 1960	83 mice	C3H	M	20 mg. in 0.5 cc. of water once wkly. for 8 wks.	Inj	Tumors[621, 622].	All sacrificed at 12 mos.	Up to 12 mos.
Heston, W. E. et al., 1960	80 mice	C3Hf	M	20 mg. in 0.5 cc. of water once wkly. for 8 wks.	Inj	Tumors[623, 624].	All sacrificed at 12 mos.	Up to 12 mos.
Heston, W. E., et al., 1960	83 mice	C3H	M	20 mg. in 0.5 cc. of water once wkly. for 8 wks.	Inj	Tumors[617, 626].	All sacrificed at 12 mos.	Up to 12 mos.

[607] 2 with hepatic hemangioma; almost all died of multiple pulmonary tumors.
[608] 10 with hepatic hemangiomas (3 with intestinal hemangiomas).
[609] 18 with hepatic hemangiomas (avg. age 617 days) (8 with intestinal hemangiomas and 3 with ovarian tumors).
[610] Pulmonary adenomas.
[611] Age: 47–55 days.
[612] 9/73 with pulmonary adenomas. 5/73 with papillomas.
[613] 6/193 croton oil treated controls with pulmonary adenomas. 10/193 croton oil treated controls with papillomas.
[614] 7/28 with pulmonary adenomas. 2/28 with papillomas.
[616] 1/29 with pulmonary adenoma. 1/29 with papilloma.
[616] 92.6% with hepatomas. 62.1% with pulmonary tumors.
[617] 85.3% of 102 untreated controls with hepatomas; 7.8% with pulmonary tumors.
[618] 91.4% with hepatomas; 100 pulmonary tumors; 5 hemorrhagic hepatic lesions; 1 mesenteric hemangioendothelioma.
[619] 78.5% of 79 untreated controls with hepatomas; 12.7% with pulmonary tumors.
[620] 89.0% with hepatomas; 57.5% with pulmonary tumors; 4 hemorrhagic hepatic lesions.
[621] 79.5% with hepatomas; 100% with pulmonary tumors; 9 hemorrhagic hepatic lesions.
[622] 85.3% of 102 untreated controls with hepatomas; 7.8% with pulmonary tumors.
[623] 90% with hepatomas; 97.5% with pulmonary tumors; 9 hemorrhagic hepatic lesions; 1 papilloma and 1 squamous cell carcinoma.
[624] 91.9% of 96 untreated controls with hepatomas; 10.4% with pulmonary tumors.
[626] 79.5% with hepatomas; 100% with pulmonary tumors; 9 hemorrhagic hepatic lesions.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
157. ETHYLCARBAMATE $NH_2—COOC_2H_5$ (Continued)								
Heston, W. E., et al., 1960	93 mice	C3Hf	M	20 mg. in 0.5 cc. of water once	Inj	Tumors[626, 627].	All sacrificed at 12 mos.	Up to 12 mos.
Heston, W. E., et al., 1960	80 mice	C3Hf	M	20 mg. in 0.5 cc. of water once wkly. for 8 wks.	Inj	Tumors[627, 628].	All sacrificed at 12 mos.	Up to 12 mos.
Heston, W. E., et al., 1960	73 mice	C3He	M	20 mg. in 0.5 cc. of water once	Inj	Tumors[619, 629].	All sacrificed at 12 mos.	Up to 12 mos.
Heston, W. E., et al., 1960	70 mice	C3He	M	20 mg. in 0.5 cc. of water once wkly. for 8 wks.	Inj	Tumors[619, 630].	All sacrificed at 12 mos.	Up to 12 mos.
Heston, W. E , et al., 1960	93 mice	C3Hf	M	20 mg. in 0.5 cc. of water once	Inj	Tumors[627, 631].	All sacrificed at 12 mos.	Up to 12 mos.
Heston, W. E., et al., 1960	95 mice	C3H	M	20 mg. in 0.5 cc. of water once	Inj	Tumors[617, 632].	All sacrificed at 12 mos.	Up to 12 mos.
Pietra, G., and Shubik, P., 1960.	20 hamsters	Syrian golden	10 F & M	0.2% in drinking water (20 mg. daily) for lifespan.	P.O	Tumors[633, 634].	3F & 9M at 50 wks.	76 wks.
Pietra, G., and Shubik, P., 1960.	20 hamsters	Syrian golden	10 F & M	6 drops of 20% in acetone (30 mg. daily) twice wkly. for lifespan.	Skin	Tumors[634, 635].	7F & 9M at 50 wks. 3 at 95 wks.	95 wks.
Roe, F. J. C., and Pierce, W. E. H., 1960.	20 mice	"101"	F	16 mg. in 0.1 ml. dist. water at 3 d. intervals for 4 injs.[636]	I.P	0[637]	11 at 30 wks	Still in progress after 30 wks.
Roe, F. J. C., and Pierce, W. E. H., 1960.	20 mice	"101"	F	16 mg. in 0.1 ml. dist. water at 3 d. intervals for 4 injs. (64 mg. total)[638].	I.P	Tumors [639]	13 at 15 wks	At least 30 wks.
Roe, F. J. C., and Pierce, W. E. H., 1960.	20 mice	"101"	F	60 mg., in 0.3 ml. acetone at 3 d. intervals for 4 applications (240 mg. total).[638]	Skin	Tumors [640]	13 at 15 wks.	At least 30 wks.
Kawamoto, S., et al., 1961	37 mice	C58	18 F & 19 M.	1 mg./g. body wt. as 10% aqueous soln. every 4 d. for 11 times.	I.P	Tumors[641, 642].		Over 2 yrs.
Kawamoto, S., et al., 1961	42 mice	AKR	23 F & 19 M.	1 mg./g. body wt. as 10% aqueous soln. every 4 d. for 11 time .	I.P	Tumors[643, 644,645].		Over 2 yrs.

[617] 85.3% of 102 untreated controls with hepatomas; 7.8% with pulmonary tumors.
[619] 78.5% of 79 untreated controls with hepatomas; 12.7% with pulmonary tumors.
[626] 94.6% with hepatomas; 54.8% with pulmonary tumors; 2 hemorrhagic hepatic lesions; 1 reticulum cell tumor.
[627] 71.9% of 96 untreated controls with hepatomas; 10.4% with pulmonary tumors.
[628] 90.0% with hepatomas; 97.5% with pulmonary tumors; 9 hemorrhagic hepatic lesions; 1 papilloma and 1 squamous cell carcinoma.
[629] 89.0% with hepatomas; 57.5% with pulmonary tumors; 4 hemorrhagic hepatic lesions.
[630] 91.4% with hepatomas; 100% with pulmonary tumors; 5 hemorrhagic hepatic lesions; 1 mesenteric hemangioendothelioma.
[631] 94.6% with hepatomas; 54.8% with pulmonary tumors; 2 hemorrhagic hepatic lesions; 1 reticulum cell tumor.
[632] 92.6% with hepatomas; 62.1% with pulmonary tumors.
[633] 1 female with melanoma; 4 with 24 forestomach papillomas and one thyroid adenoma; 1 with metastasizing hepatic hemangiosarcoma; 7 males with melanoma; 6 with 30 forestomach papillomas and 1 malignant lymphoma; 1 with carcinoid bronchial adenoma.
[634] 63 untreated controls with 1 melanoma at 73 weeks of age.
[636] 2 females with 6 forestomach papillomas.
[636] 4 weekly applications of 0.1 ml. orange oil, then 3 applications at 2–3 week intervals, begun 2 weeks post-treatment.
[637] Majority developed pulmonary adenomas after 18 weeks.
[638] 27 weekly applications of 0.25 ml. orange oil begun 3 weeks post-treatment.
[639] 2 with 3 papillomas; majority developed pulmonary adenomas after 18 weeks.
[640] 3 with papillomas; majority developed pulmonary adenomas after 18 weeks.
[641] 8 females with: 8 hepatic hemangiomas, 4 intestinal hemangiomas, 1 pulmonary tumor and 1 cystic ovarian tumor; 13 with leukemia.
[642] Leukemia in controls and treated animals similar.
[643] 22 females with leukemia (261 days avg.); 1 with hepatic hemangioma. 16 males with leukemia (248 days avg.); 1 with hepatic hemangioma; 1 female with hepatic hemangioma and pulmonary tumor. 1 male with hepatic and intestinal hemangioma.
[644] Untreated control. 87.5% of untreated control females developed leukemias at 278 (avg.). 73.6% of untreated control males developed leukemias at 298 (avg.).
[645] Conclusion that urethan accelerated onset of leukemia.

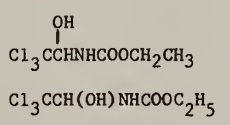
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
158. ETHYL β-CHLOROVINYL ETHYNYL CARBINOL 								
P'An, S. Y., et al., 1955	12 rats	Wistar albino	M	5 mg./kg. given 6 d./wk. for 75 wks.	P.O., stomach tube.	0	4 sacrificed at 1 yr.	75 wks.
P'An, S. Y., et al., 1955	12 rats	Wistar albino	M	10 mg./kg. given 6 d./wk. for 75 wks.	P.O. stomach tube.	0	4 sacrificed at 1 yr.	75 wks.
P'An, S. Y., et al., 1955	12 rats	Wistar albino	M	25 mg./kg. given 6 d./wk. for 75 wks.	P.O., stomach tube.	0	1 sacrificed at 1 yr.	75 wks.
P'An, S. Y., et al., 1955	12 rats	Wistar albino	M	50 mg./kg. given 6 d./wk. for 75 wks.	P.O., stomach tube.	0	2 sacrificed at 1 yr.	75 wks.
P'An, S. Y., et al., 1955	4 dogs			25 mg./kg. given 6 d./wk. for 77 wks.	P.O., stomach tube.	0	1 accidentally killed at 9 wks. 2 sacrificed at 53rd wk.	85 wks.
P'An, S. Y., et al., 1955	4 dogs			10 mg./kg. given 6 d./wk. for 77 wks.	P.O., stomach tube.	0	2 sacrificed at 53rd wk.	85 wks.
P'An, S. Y., et al., 1955	4 dogs			5 mg./kg. given 6 d./wk. for 77 wks.	P.O., stomach tube.	0	1 accidentally killed at 9 wks., 1 sacrificed at 53rd wk.	85 wks.
159. ETHYLENEDIAMINE $H_2NCH_2CH_2NH_2$								
Pozzani and Carpenter, 1954	90 rats	Sherman	M & F	225, 132, & 59 ppm. of air 7 hrs. per d., 5 d. per wk. for 30 d.	Inhalation	0	60	30 d.
160. ETHYLENEDIAMINE TETRAACETIC ACID, SODIUM SALT 								
Haddow, A., and Horning, E. S., 1960.	20 mice	CBA		0.2 cc. of 5% soln.[646] for 21 wks.	S.C.	0	18 at 14 mos.	14 mos. to date.
161. ETHYL FORMATE $HCOOC_2H_5$								
Roe and Salaman, 1955	20 mice	Albino "S" strain.	M	10 wkly. applications of 0.3 ml. each (Total dose 2.76 g.)[647].	Skin	0	14 at 18 wks.	At least 19 wks.

[646] Versene.

[647] 18 weekly applications of 0.3 ml. of 0.5% croton oil in acetone (at first alternated at 3-day intervals with test substance.)

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
162. ETHYLENE GLYCOL $HOCH_2CH_2OH$								
Berenblum and Haran, 1955	15 mice[390]	Swiss	F	Twice wkly. applications for 43 wks	Skin	0		At least 43 wks.
Berenblum and Haran, 1955	20 mice[648]	Swiss	F	Twice wkly. applications for 6 wks.[649]	Skin	1[650]	19 at 16 wks	At least 45 wks.
Berenblum and Haran, 1955	20 mice[68]	Swiss	F	1 application.[661]	Skin	0	18 alive at 10 wks.	At least 39 wks.
Berenblum and Haran, 1955	20 mice[68]	Swiss	F	1 application.[649]	Skin	1[662] (pap.)	18 at 10 wks	At least 39 wks.
Berenblum and Haran, 1955	20 mice[648]	Swiss	F	Twice wkly. applications for 6 wks.[653]	Skin	No skin tumors[654]	All alive at 16 wks.	At least 45 wks.
Paterni et al., 1956	10 rats	Albino		4 ml./Kg. body wt. in dist. water 1:1, every second d.	S.C	([655])	8 alive at 30 d	Up to 65 d.
163. ETHYLENE GLYCOL MONO-*n*-BUTYL ETHER $HOCH_2CH_2O(CH_2)_3CH_3$								
Carpenter, C. P., et al., 1956	1 monkey	Rhesus		210 ppm. of vapor[656] for 30 d	Inhalation	0[667]	30 d	30 d.
Carpenter, C. P., et al., 1956	2 monkeys			100 ppm. of vapor for 90 d	Inhalation	0[668]	Sacrificed	90 d.
Carpenter, C. P., et al., 1956	Dogs	Basenji	M & F	Mean conc. of 200 ppm. of vapor for 31 d.	Inhalation	0		31 d.
Carpenter, C. P., et al., 1956	Dogs	Wire-haired Terrier.	M & F	Mean conc. of 100 ppm. of vapor for 90 d.	Inhalation	0		90 d.
Carpenter, C. P., et al., 1956	Mice		M	Avg. conc. of 401, 201 or 112 ppm. of vapor 7 hrs./d. for 90 d.	Inhalation	0[659]		132 d.
Carpenter, C. P., et al., 1956	Mice		M	Avg. conc. of 399, 200 or 111 ppm. of vapor 7 hrs./d. for 60 d.	Inhalation	0[660]		60 d.
Carpenter, C. P., et al., 1956	210 mice		M	Avg. conc. of 203, 112 or 396 ppm. of vapor 7 hrs./d., for 30 d.	Inhalation	0		30 d.
Carpenter, C. P., et al., 1956	Mice		M	Avg. conc. of 401, 201 or 112 ppm. of vapor 7 hrs./d. for 90 d.	Inhalation	0[661]		90 d.
Carpenter, C. P., et al., 1956	20 mice	C3H	M	376 or 494 ppm. of vapor for 30 d	Inhalation	0[662]	9 died	30 d.
Carpenter, C. P., et al., 1956	74 guinea pigs.		62 M, 12 F	54, 107, 203, 376 or 494 ppm. of vapor 7 hrs./d., 5 d./wk., for 30 d.	Inhalation	0[663]	100%	30 d.

[68] Age at start$_0$ 5 mos.
[390] Age at beginning: $3\frac{1}{2}$ months.
[648] Age at start: 4 months.
[649] 70 semi-weekly applications of 5% croton oil in paraffin begun 4 weeks post-treatment.
[650] 1 with 3 papillomas. 1 with pulmonary adenomas.
[651] 70 semi-weekly applications of paraffin begun 4 weeks post-treatment.
[652] Appeared 20 weeks after first application croton oil.
[653] 35 semi-weekly applications of paraffin begun 4 weeks post-treatment.
[654] 1 with pulmonary adenomas.
[655] Hematology and histology study.
[656] Butyl cellusolve.
[667] Possible pulmonary tuberculosis; no other pathology.
[658] Tuberculosis sufficient to mask inhalation effects.
[659] Of 41 examined, no pathology.
[660] Of 45 examined, no pathology.
[661] Of 30 examined, no pathology.
[662] No details.
[663] Response of group exposed to 54 ppm. comparable to controls.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
163. ETHYLENE GLYCOL MONO-n-BUTYL ETHER $HOCH_2CH_2O(CH_2)_3CH_3$ (Continued)								
Carpenter, C. P., et al., 1956	118 rats	Sherman	59 M, 59 F	432, 314, 203, 107, or 54 ppm. of vapor 7 hrs./d., 5 d./wk., for 30 d.	Inhalation	0	27 died	30 d.
Carpenter, C. P., et al., 1956	40 rats[110]	Sherman	20 M, 20 F	0.03%, 0.125%, 0.5% or 2.0% incorporated in diet (total of 0.018 g./kg./d.) for 90 d.	P.O	0		90 d.
164. ETHYL THIOLCARBAMATE $H_2NCOSC_2H_5$								
Roe and Salaman, 1955	18 mice	Albino "S" strain.	M	0.3 ml. of 20% soln. in acetone, 2 times at intervals of 4 d. (total dose: 180.0 mg.).[318]	Skin	1 (skin tumor).	16 at 21 wks	At least 22 wks.
165. ETHYL 2,2,2-TRICHLORO-1-HYDROXYETHYLCARBAMATE 								
Glazko, A. J., et al., 1956	Rats			599 mg./kg. daily in diet avg. dose for over 6 mos.	P.O	0		Over 6 mos.
Glazko, A. J., et al., 1956	Dogs			300 mg./kg. daily 5 d./wk. for 1 yr.	P.O	0		1 yr.
166. FERRIC CITRATE $HO—C(COO)(CH_2COO)_2Fe \cdot x\ H_2O$								
Haddow, A., and Horning, E. S., 1960.	20 mice	Stock		5 mg. wkly. for 33 wks	S.C	0	13 at 9 mos	9 mos. to date.
167. FERRIC DIMETHYLDITHIOCARBAMATE $[(CH_3)_2N—CS—S]_3Fe$								
Hodge, H. C., et al., 1956[664]	6 dogs	Beagle	3āā	0.5, 5.0, 25 mg./kg./d. in diet for 1 yr.	P.O	0		1 yr.
Hodge, H. C., et al., 1956[664]	150 rats		75āā	0.0025, 0.025 or 0.25% in the diet for 2 yrs.	P.O	0		2 yrs.
Hodge, et al., 1956	50 weanling rats.	Rochester	M & F	0.0025% in diet	P.O	0	600–700 d	2 yrs.
Hodge, et al., 1956	50 weanling rats.	Rochester	M & F	0.025% in diet	P.O	0	600–700 d	2 yrs.
Hodge, et al., 1956	50 weanling rats.	Rochester	M & F	0.25% in diet	P.O	0	430 d	Life.
Hodge, et al., 1956	Young adult dogs—2.	Beagle	M & F	0.5 mg./kg./d. in food	P.O	0		1 yr.

[110] Initial treatment: 6 weeks of age.
[318] 18 weekly applications of 0.3 ml. of 0.5% croton oil in acetone solution begun 3 weeks post-treatment.
[664] An abstract.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
167. FERRIC DIMETHYLDITHIOCARBAMATE $:(CH_3)_2N—CS—S:_3Fe$ (Continued)								
Hodge, et al., 1956	Young adult dogs—2.	Beagle	M & F	5 mg./kg./d. in food	P.O	0		1 yr.
Hodge, et al., 1956	3 young adult dogs.	Beagle	M & F	25 mg./kg./d. in food	P.O	0	1 died at 9 mos	1 yr.
168. FERROUS LACTATE $Fe(C_3H_5O_3)_2 \cdot 3H_2O$								
Haddow, A., and Horning, E. S., 1960.	20 mice	Stock		5 mg. wkly. for 21 wks	S.C	Tumors[666]	11 at 12 mos	12 mos. to date.
169. FORMALDEHYDE HCHO								
Watanabe, F., et al., 1954	10 rats		M & F	1 cc. of a 0.4% aqueous soln., wkly. injs. for about 15 mos.	S.C. (back)	4 sarc.[666]		At least 649 d.
170. GALLIUM CITRATE $HO—C(COO)(CH_2COO)_2Ga$								
Mulay and Schlyen, 1956	6 mice	C57 Brown	M	100 mg./kg./wk. in aqueous soln. to total 56.0 mg. for 28 wks.	S.C	None[667,668]	All died at 8 mos	34 wks.
171. GLYCEROL $CH_2OHCHOHCH_2OH$								
Bornmann, G., 1954	60 rats		M & F	1%, 2%, 5%, 10%, & 20% in drinking water.	P.O	0		13½ wks.
Finckh, E. S., 1957	200 rats (or more).	Wistar albino	M & F	1.75 cc. of 50% soln. in 0.85% saline/100 gm. body wt. once.	S.C	0[669]		Up to 12 wks.
Campbell, J. A. H., 1958	15 rabbits		M & F	7–10 ml. of 50% in saline/kg. body wt. once wkly. for 10–17 wks.[670]	S.C	0[671,672]	3 died during experiment.	17 wks.
Campbell, J. A. H., 1958	27 rats	23 Wistar & 4 Norwegian hooded.	M & F	1.2 ml. of 50% in saline/100 g. body wt. once wkly. for 7–15 wks.[673]	S.C	0[674,676]		15 wks.
172. GLYCINE, ETHYL ESTER $H_2NCH_2COOC_2H_5$								
Roe and Salaman, 1955	20 mice	Albino "S" strain.	M	0.3 ml. of 19% soln. in 20% aqueous carbowax 300, wkly. for 10 wks. (total dose: 0.57 g.[647]).	Skin	0	18 at 18 wks	At least 19 wks.

[647] 18 weekly applications of 0.3 ml. of 0.5% croton oil in acetone (at first alternated at 3-day intervals with test substance.)
[665] 1 sarcoma.
[666] 3 injection site spindle cell sarcomas. Latent periods 570 to 649 days. 1 fibrosarcoma.
[667] 1 with glandular stomach lesions (parietal and chief cells). 1 with renal lesions.
[668] Stomach lesions due to gallium. Renal lesions possibly due to gallium.
[669] Renal inflammation with healing in 7 weeks.
[670] 3 received semi-weekly injections from 10th to 17th week.
[671] Injection site fat necrosis and renal tubular atrophy.
[672] 3/6 controls with pyelonephritis.
[673] 7 received semiweekly injections from 10th to 15th week.
[674] Renal tubular atrophy and regeneration.
[676] 7 controls negative.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
173. HELIOTRIC ACID $CH_3CH(OCH_3)C(OH)(COOH)CH(CH_3)_2$								
Bull, L. B., & Dick, A. T., 1959.	12 rats	Hooded	M	15 mg./kg. thrice wkly. for 9 injs. reduced to ½ dose increased to double orig. dose for last 15 injs., total 387 mg.	I.P	0		192 d.
174. β-HYDROXY ETHYLCARBAMATE $H_2N—COOCH_2CH_2OH$								
Berenblum, I., et al., 1959	29 mice	Swiss	M & F	25 mg.[676] in liq. paraffin once. 4 d. subsequent treated with twice wkly. skin applications of 5% soln. croton oil in liq. paraffin for 40 wks.	P.O	0[677,265]	All sacrificed at 40 wks.	40 wks.
175. N-HYDROXY ETHYL CARBAMATE $HONHCOCH_2CH_3$								
Berenblum, I., et al., 1959	18 mice	Swiss	M & F	5 mg. as aqueous soln. once, 4 d. subsequent treated with twice-wkly. skin applications of 5% soln. croton oil in liq. paraffin for 40 wks.	I.P	Tumors[679, 126].	All sacrificed at 40 wks.	40 wks.
Berenblum, I., et al., 1959	30 mice	Swiss	M & F	11.8 mg. in saline once, 4 d. subsequent treated with twice-wkly. skin applications of 5% soln. croton oil in liq. paraffin for 40 wks.	I.P	Tumors[126, 680].	All sacrificed at 40 wks.	40 wks.
Berenblum, I., et al., 1959	25 mice	Swiss	M & F	25 mg. as aqueous soln. once, 4 d. subsequent treated with twice-wkly. skin applications of 5% soln. croton oil in liq. paraffin for 40 wks.	P.O	Tumors[126, 681].	All sacrificed at 40 wks.	40 wks.
Berenblum, I., et al., 1959	20 mice	Swiss	M & F	25 mg. as aqueous soln. once, 4 d. subsequent treated with twice-wkly. skin applications of 5% soln. croton oil in liq. paraffin for 40 wks.	I.P	Tumors[126, 682].	All sacrificed at 40 wks.	40 wks.

[126] 46 croton oil controls with 11 papillomas; 2 pulmonary adenomas. Questionable carcinogenicity.
[265] 46 croton oil controls with 11 skin papillomas; 2 pulmonary adenomas.
[676] β-hydroxyurethane.
[677] 6/14 papillomas (avg. 0.4±0.1 tumor/mouse).
[678] N-hydroxyurethane.
[679] 8/18 papillomas (avg. 0.25±0.05 tumor/mouse). 5/18 with pulmonary adenomas (avg. 0.4±0.1 tumor/mouse).
[680] 6/28 papillomas (avg. 0.2±0.1 tumor/mouse). 5/26 with pulmonary adenomas (avg. 0.3±0.1 tumor/mouse.)
[681] 19/20 papillomas (avg. 1.5±0.3 tumors/mouse. 9/20 with pulmonary adenomas (avg. 0.75±0.3 tumor/mouse.)
[682] 17/18 with papillomas (avg. 1.9±0.2 tumors/mouse). 11/18 with pulmonary adenomas (avg. 0.8±0.2 tumor/mouse.)

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
176. 3 [2-HYDROXY-3-(D-GLUCOPENTAHYDROXY HEXYL MERCAPTOMERCURI) PROPYL]α-MANNITOL $HOCH_2CH(OH)C(OH)(CHOH)_2CH_2OH$ / $CH_2CH(OH)CH_2HgS(CHOH)_5CH_3$								
Gardier, R. W., and Woodbury, R. A., 1956.	2 dogs		1 F & 1 M	8.6 mg./kg.[683] aqueous soln. thrice wkly.	I.M	0	100%	13 wks.
Gardier, R. W., and Woodbury, R. A., 1956.	2 dogs		1 M & 1 F	4.28 mg./kg. aqueous soln. thrice wkly.	I.M	0	100%	13 wks.
Gardier, R. W., and Woodbury, R. A., 1956.	2 dogs		F	2.14 mg./kg. aqueous soln. thrice wkly.	I.M	0	100%	13 wks.
Gardier, R. W., and Woodbury, R. A., 1956.	2 dogs		F	0.8 mg./kg. aqueous soln. thrice wkly.	I.M	0	100%	13 wks.
Gardier, R. W., and Woodbury, R. A., 1956.	2 dogs		1 M & 1 F	0.4 mg./kg. aqueous soln. thrice wkly.	I.M	0	100%	13 wks.
177. IODOACETIC ACID ICH_2COOH								
Tagashira, Y., 1954	13 rats	Hybrid	M & F	0.5 cc.[684] soln. in water[685] every other d. for 1 yr rice diet. Total of 180 injs.	S.C.	Tumors[686]	2 survived 450 d. or more.	573 d.
Tagashira, Y., 1954	Rats	Hybrid	M & F	0.5 cc. soln. in water[685] every other d. for 3 mos., rice diet. Total of 0.096 g.	S.C.	Tumor[687]	7 survived 300 d. or more, 3 survived 500 d. or more.	596 d.
Berenblum and Haran-Ghera, 1957.	58 mice[416]	Swiss	M	0.2 ml. of a 0.4% soln. in dist. water, wkly. for 45 wks. (Total dose 36 mg.)[459].	P.O., stomach tube.	2 (5%) (pap. of the fore-stomach)[688].	40 alive at 10 wks.	45 wks.
178. ISOAMYL ALCOHOL $(CH_3)_2CHCH_2CH_2OH$								
Miyazaki, M., 1955	4 rats	Albino		10% in basal diet for 30 d., 20% for 30 more d.	P.O	0		60 d.
179. ISOBUTYL ALCOHOL $(CH_3)_2CHCH_2OH$								
Miyazaki, M., 1955	4 rats	Albino		10% in basal diet for 30 d	P.O	0		30 d.
180. ISOPROPANOL $(CH_3)_2CHOH$								
Miyazaki, M., 1955	8 rats	Albino		10% in basal diet for 30 d	P.O	0		30 d.

[416] Age: 3–3½ months.
[459] Pre-treatment: water only for 18 hours.
[683] Diglucomethoxane.
[684] Monoiodoacetic.
[685] Preinjection incubator sterilization (56° C. for 30 minutes for 3 days).
[686] 1 with plasma cell sarcoma (564th day). 1 injection site fibroma (573rd day).
[687] 1 injection site fibrosarcoma (549th day).
[688] Avg. 0.07±0.05 tumor/survivor (10 weeks).

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
181. ISOPROPYLMETHYLPHOSPHONOFLUORIDATE $(CH_3)_2CHOP(O)F(CH_3)$								
Cohen, B. S., et al., 1956	32 rats			50 mg. (min.)[689] M^3 5 d./wk.—63 exposures.	Inhalation	0	3 died	Over 200 d.
Cohen, B. S., et al., 1956	32 rats			50 mg./min./M^3 for 35 exposures	Inhalation	0	1 died	Over 200 d.
Cohen, B. S., et al., 1956	117 rats			50 mg./min./M^3 5 d./wk.—35 exposures then 75–508 mg./min./M^3 for up to 25 exposures.	Inhalation	0	11 died	Over 200 d.
182. LAURIC ACID $CH_3(CH_2)_{10}COOH$								
Holsti, P., 1959	30 mice	White	15 M & F	20% soln. in chloroform once daily	Skin	0		31 wks.
Holsti, P., 1959	30 mice	White	15 M & F	40% soln. in chloroform once daily	Skin	0		31 wks.
183. MANNITOL $C_6H_8(OH)_6$								
Takizawa, N., et al., 1957	20 mice	Hybrid		0.5 cc. of 25% soln. every d	S.C	0		650 d.
184. METHIONINE $CH_3SCH_2CH_2CH(NH_2)COOH$								
MacDonald, R. A., 1959	6 rats	Sprague-Dawley.	M	8 mg. twice daily for 73 d	S.C	0		73 d.
185. METHYLACETYLENE $CH_3C{\equiv}CH$								
Horn, H. H., et al., 1957	2 dogs			Conc. 28,700 ppm. vapor six hrs/d., 5 d./wk. for six mos. Animals kept in a 500 liter chamber.	Inhalation	0	Duration of experiment.	6 mos.
Horn, H. J., et al., 1957	20 rats	Albino	M	Conc. 28,700 ppm. vapor six hrs./d., 5 d./wk. for six mos. Animals kept in a 500 liter chamber.	Inhalation	0[690]	8 died by the 103rd d.	6 mos.
186. METHYL ALCOHOL CH_3OH								
Miyazaki, M., 1955	4 rats	Albino		10% in basal diet for 30 d., 20% for 30 more d.	P.O		1 died on 37th d	60 d.
187. METHYL BIS(β-CHLOROETHYL)AMINE $CH_3{-}N(CH_2CH_2Cl)_2$								
Narpozzi, A., 1954	138 mice	White		0.3–0.4 mg./kg. body wt., once wkly. for 64 wks.	S.C	1 lymphoma.	Approx. 40 at 1 yr.	At least 1 yr.
Narpozzi, A., 1954	138 mice[691]	Albino		0.3–0.4 mg./kg. body wt. in physiological soln., wkly. for 64 wks.	S.C	1[692]	65 at 9 mos., 40 at 12 mos.	64 wks.

[689] Sarin.
[690] 3/12 survivors with pulmonary cysts and irritation.
[691] Strain with no spontaneous pulmonary adenoma.
[692] One lymphoma.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
187. METHYL BIS(β-CHLOROETHYL)AMINE $CH_3—N(CH_2CH_2Cl)_2$ (Continued)								
Roe and Salaman, 1955	10 mice	Stock albino "S" strain.	M	0.3 ml.[693] of 0.1% soln. in acetone, wkly. for 15 wks. (Total dosage: 4.5 mg.[694]).	Skin	1 (skin tumor)	9 alive at 18 wks	Approx. 19 wks.
Roe and Salaman, 1955	10 mice	Albino "S" strain.	M	0.3 ml. of 0.03% soln. in acetone, wkly. for 15 wks. (Total dosage: 1.5 mg. [694]).	Skin	3 (4 skin tumors).	All alive at about 18 wks.	Approx. 19 wks.
188. METHYL BIS(β-CHLOROETHYL)AMINE N-OXIDE HYDROCHLORIDE $CH_3N(CH_2CH_2Cl)_2 \cdot HCl$								
Narpozzi, A., 1953	60 mice	White	M & F	0.05% in saline, painted every 2nd d. for 30 d., followed by up to 235 applications of croton oil, 5% in liq. paraffin, every 2nd d. for 2½ mos., irregularly afterwards, treatment with croton oil lasted for 15 mos.	Skin	0[695]	39 alive at one yr	16 mos.
189. METHYL BIS(β-CHLOROETHYL)AMINE N-OXIDE HYDROCHLORIDE $CH_3N(O)(CH_2CH_2Cl)_2 \cdot HCl$								
Kaziwara, K., 1953	12 rats		6 M, 6 F	10 mg./kg. in aqueous soln. 2 or 3 times a wk. for about 100 d., (total doses 48.5–60 mgm.)	S.C	0		About 200 d.
Tokuoka, S., 1955	15 mice	dt homogeneous	M & F	5 mg./kg.[696] body wt. dissolved in normal saline at rate of 1 mg./cc., twice a wk. for 15 wks.	I.V	Tumors[697]	6 survived 26 wks. or more.	80 wks.
Tokuoka, S., 1955	15 mice	dt homogeneous	M & F	5 mg./kg. of body wt. dissolved in normal saline at rate of 1 mg./cc., twice a wk. for 15 wks.	S.C	Tumors[698]	6 survived 26 wks. or more.	80 wks.
Tokuoka, S., 1955	21 mice	dt homogeneous	M & F	5 mg./kg. body wt. dissolved in normal saline at rate of 1 mg./cc., twice a wk. for 15 wks.	I.P	Tumors[699]	9 survived 26 wks. or more.	80 wks.
Yamamato, T., and Yamada, A., 1955.	Rats	Wistar	M & F	10 mg./kg. body wt. in water soln. 2× a wk.	I.P	0[308]		37 wks. to date.
Yamamoto, T., and Yamada, A., 1955.	Rats	Wistar	M & F	10 mg./kg. body wt. in water soln. 2× a wk.	P.O	0[308]		37 wks. to date.
Yamamoto, T., and Yamada, A., 1955.	Rats	Wistar	M & F	10 mg./kg. body wt. in water soln. 2× a wk.	I.V	0[308]		37 wks. to date.
Honjo, O., 1956	10 rats	Wistar		1 mg. (5–10 mg./kg. wt.) twice a wk. 56 times	I.P	Tumors[700]	3 at 10 mos.	About 1 yr.
Muzuno, T., and Hagihara, T., 1956.	Rabbits	White	M	10 mg., 30 mg., 50 mg. or 100 mg. once.	I.V	0		30 d.

[308] Experiment not terminated.
[693] Nitrogen mustard.
[694] 18 weekly applications 0.3 ml. of 0.5% croton oil in acetone; first, alternated at 3–4 day intervals test substance.
[696] 6 developed application site verrucoid growths.
[696] Nitromin.
[697] 3 leukemias; 1 hepatoangioma; 3 pulmonary adenomas.
[698] 2 leukemias; 1 hepatoangioma; 1 fibrosarcoma; 1 pulmonary adenoma.
[699] 2 leukemias; 1 pulmonary adenoma.
[700] 1 hepatic endothelioma.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
189. METHYL BIS(β-CHLOROETHYL)AMINE N-OXIDE HYDROCHLORIDE $CH_3N(O)(CH_2CH_2Cl)_2 \cdot HCl$ (Continued)								
Muzuno, T., and Hagihara, T., 1956.	Rabbits	White	M	10 mg., 30 mg., 50 mg., or 100 mg. every d.	I.V	0		At least 40 d.
Nakamura, K., 1956	180 mice	d-d	F	0.25 mg./mouse, 11–15 times in 85 d.	Inj	Tumors[701]	23 at 9 mos	At least 9 mos.
190. METHYL BROMIDE CH_3Br								
Rosenblum, I., et al., 1960	4 dogs	Beagle	3 M & 1 F	150 mg./kg./d. of bromide in food as fumigant.	P.O	0	1 died	Over 1 yr.
Rosenblum, I., et al., 1960	4 dogs	Beagle	2 F & M	35 mg./kg./d. of bromide in food as fumigant.	P.O	0	100%	Over 1 yr.
Rosenblum, I., et al., 1960	4 dogs	Beagle	3 M & 1 F	75 mg./kg./d. of bromide in food as fumigant.	P.O	0	1 died	Over 1 yr.
191. METHYL CARBAMATE $H_2N—COOCH_3$								
Roe and Salaman, 1955	20 mice	Albino "S" strain.	M	0.3 ml. of 25% soln. in acetone, wkly. for 15 wks. (Total dose 1.12 g.[647]).	Skin	1 (skin tumor).	18 at 18 wks	At least 19 wks.
192. METHYL DIVINYL ACETYLENE $CH_2=C(CH_3)—C\equiv C—CH=CH_2$								
Rockhold, W. T., et al., 1959	3 rabbits	Albino	M	0.01 ml. at well spaced areas of belly, once.	Skin	0		4 mos.
193. N-METHYL ETHYL CARBAMATE $CH_3—NH—COOC_2H_5$								
Roe and Salaman, 1955	18 mice	Albino "S" strain.	M	0.3 ml.[702] of 42% soln. in acetone, twice (1-wk. interval). (Total dose: 250.0 mg.[703]).	Skin	7 (9 skin tumors).	17 at 21 wks	At least 22 wks.
Berenblum, I., et al., 1959	30 mice	Swiss	M & F	11.5 mg. in saline soln. once, 4 d. subsequent treated with twice-wkly. skin applications of 5% soln. croton oil in liq. paraffin for 40 wks.	I.P	Tumors[257, 704].	All sacrificed at 40 wks.	40 wks.
Berenblum, I., et al., 1959	20 mice	Swiss	M & F	12.5 mg. as aqueous soln. once, 4 d. subsequent treated with twice-wkly. skin applications of 5% soln. croton oil in liq. paraffin for 40 wks.	P.O	Tumors[257, 705].	All sacrificed at 40 wks.	40 wks.

[257] 46 croton oil controls with 11 papillomas and 2 pulmonary adenomas. Carcinogenicity questionable.

[647] 18 weekly applications of 0.3 ml. of 0.5% croton oil in acetone (at first alternated at 3-day intervals with test substance.)

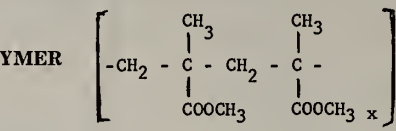
[701] 1 leukemic ascites tumor; 22/23 with leukemic changes.

[702] N-Methyl methane.

[703] 18 weekly applications of 0.3 ml. of 0.5% croton oil in acetone; begun 3 weeks after initiation of treatment.

[704] 10/30 papillomas (avg. 0.4±0.1 tumor/mouse). 7/24 with pulmonary adenomas (avg. 0.4±0.1 tumor/mouse).

[705] 14/20 papillomas (avg. 1.2±0.4 tumors/mouse). 4/20 with pulmonary adenomas (avg. 0.25±0.1 tumor/mouse.)

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
194. METHYL METHACRYLATE POLYMER 								
Laskin, D. M., et al., 1954	50 mice	Harlan		Film 1×1 cm. with rounded corners 0.008 in. thick embedded.	S.C. (abdominal wall).	5 fibrosarcomas[706].	20 at 257 d	At least 469 d.
Oppenheimer, et al., 1955	Rats	Wistar	M	Plain film, 1.5 cm. in width, 0.14 mm. in thickness.	S.C. (abdominal wall).	4 (20%)[707]	20 at 581 d	At least 658 d.
195. 2.-METHYL-2N-PROPYL-1,3 PROPANEDIOL DICARBAMATE $H_2NCOOCH_2C(CH_3)(C_3H_7)CH_2OCONH_2$								
Berger, F. M., 1954	4 dogs			1 g.[708] daily 60–75 d	P.O	0	100%	75 d.
Berger, F. M., 1954	60 rats	Sherman	M & F	0.5, 1.0 or 2.0% in the diet	P.O	0		15 mos.
Berenblum, I., et al., 1959	20 mice	Swiss	M & F	7 mg. in saline once, 4 d. subsequent treated with twice-wkly. skin applications of 5% soln. croton oil in liq. paraffin for 40 wks.	I.P	0[255,709]	All sacrificed at 40 wks.	40 wks.
196. METHYLSULFONAL $C_2H_5C(CH_3)(SO_2C_2H_5)_2$								
Roe and Salaman, 1955	20 mice	Stock albino "S" strain.	M	2 wkly. applications of 0.3 ml. of 8% soln. in acetone (Total dose: 48.0 mg.[298]).	Skin	2 (4 skin tumors).	18 at 22 wks	At least 23 wks.
197. MONOALLYLAMINE $CH_2{=}CHCH_2NH_2$								
Hine, C. H., et al., 1960	60 rats[306]	Long Evans	M	5, 10, 20 & 40 ppm. of vapor 7 hrs./d. for 50 exposures.	Inhalation	0	5 died in 40 ppm. group.	At least 50 d.
198. MONOCHLOROACETIC ACID $ClCH_2COOH$								
Fuhrman, F. A., et al., 1955	6 weanling rats per group.	Slonaker-Wistar.	M	0.005%, 0.01%, 0.025%, 0.05% & 0.1% in diet of each group.	P.O	None	5 deaths due to injury or pneumonia.	208 d.
199. MONOTHIOURETHANE $NH_2C(S)OC_2H_5$								
Berenblum, I., et al., 1959	32 mice	Swiss	M & F	5 mg. in saline once, 4 d. subsequent treated with twice-wkly. skin applications of 5% soln. croton oil in liq. paraffin for 40 wks.	I.P	0[255,710]	All sacrificed at 40 wks.	40 wks.

[255] 46 croton oil controls with 11 skin papillomas; 2 pulmonary adenomas.
[298] 18 weekly applications 0.3 ml. of 0.5% croton oil in acetone solution begun 4 weeks post-treatment.
[306] 15/group.
[706] At 257, 405, 438, 454, and 469 days.
[707] Predominately fibrosarcomas.
[708] Miltown (meprobamate).
[709] 6/20 papillomas (avg. 0.3±0.1 tumor/mouse).
[710] 12/30 papillomas (avg. 0.45±0.15 tumor/mouse).

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
200. NICKEL CARBONYL								
Sunderman, F. W., et al., 1957	64 rats	Wistar albino	M	0.03 mg. (as an alcohol ether mixture)/liter for 30 min. 3 times/wk. for 52 wks.	Inhalation	0[711,712]	16 at 52 wks	52 wks.[713]
Sunderman, F. W., et al., 1957	32 rats	Wistar albino	M	0.03 mg. (as an alcohol ether mixture)/liter for 30 min. 3 times/wk. for 3 wks., then 0.06 mg./liter for a total period of 52 wks.	Inhalation	0[711,712]	4 at 52 wks	52 wks.[713]
Sunderman, F. W., et al., 1959	32 rats	----------	----------	Conc. 0.06 mg./L. as alcohol-ether vapor, thrice wkly. for 1 yr.	Inhalation	Tumors [714]	1 at 24 mos	24 mos.
Sunderman, F. W., et al., 1959	64 rats	----------	----------	Conc. 0.03 mg./L. as alcohol-ether vapor, thrice wkly. for 1 yr.	Inhalation	Tumors [715]	5 at 25 mos	27 mos.
Sunderman, F. W., et al., 1959	80 rats	----------	----------	Conc. 0.25 mg./L. as alcohol-ether vapor, once.	Inhalation	Tumors[716, 717]	52 died within 1 wk., 3 at 2 yrs.	30 mos.
201. NITROMETHANE CH_3NO_2								
Weatherby, J. H., 1955	2 dogs	----------	----------	20% emulsified in 0.3% methylcellulose, 0.125 g./kg. body wt. once.	P.O	0	100%	2 mos.
Weatherby, J. H., 1955	10 rats	Albino	M	0.1% in drinking water for 15 wks	P.O	0	4 died during experiment.	15 wks.
Weatherby, J. H., 1955	10 rats	Albino	M	0.25% in drinking water for 15 wks	P.O	0	3 died during experiment.	15 wks.
202. NITROSODIMETHYLAMINE $(CH_3)_2NH—NO$ (SEE ALSO COMPOUND 148)								
Schmahl, D., and Preussmann, R., 1959.	22 rats	Hybrids	M & F	40 mg./kg. mixed with the food 5 times wkly.	P.O	Tumors [718]	19 at the 27th wk.	Life span.
203. OCTADECYLAMINE $CH_3(CH_2)_{17}NH_2$								
Deichmann, W. B., et al., 1958	24 rats	Sprague-Dawley.	12 āā	Dissolved in corn oil, 100 ppm. in diet for 2 yrs.[719]	P.O	0	Mean 503.5 d.—M & 510.3 d.—F.	2 yrs.
Deichmann, W. B., et al., 1958	24 rats	Sprague-Dawley.	12 āā	Dissolved in corn oil, 20 ppm. in the diet for 2 yrs.[719]	P.O	0	Mean 503.6 d.—M & 540.4 d.—F.	2 yrs.
Deichmann, W. B., et al., 1958	10 rats	Sprague-Dawley.	5 āā	3,000 ppm. in basic diet for 209 d	P.O	0[720]	Aver. 87 d.—M & 119 d.—F.	209 d.

[711] Broncho-epithelial squamous metaplasia.
[712] Alcohol-ether controls normal.
[713] Survivors remain under observation.
[714] 1 pulmonary carcinoma; adenocarcinomatous pattern at 24 months. Alcohol-ether controls negative at 30 months.
[716] 1 pulmonary squamous cell carcinoma at 27 months. Alcohol-ether controls negative at 30 months.
[716] 1 anaplastic pulmonary carcinoma at 2 years. 1 with 2 papillary bronchial adenomas at 30 months.
[717] Alcohol-ether controls negative at 30 months.
[718] 9 hepatomas; 2 hepatic sarcomas; 1 benign hepatic adenoma.
[719] Contained 20% hexadecylamine.
[720] 3 with hepatic histiocytic nodules.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
203. OCTADECYLAMINE $CH_3(CH_2)_{17}NH_2$ (Continued)								
Deichmann, W. B., et al., 1958	3 dogs	Mongrel	2 F & 1 M	Capsule containing 15.0 mg. in corn oil soln./kg./d, 5 d./wk., for 1 yr.[719]	P.O	0	1 died at 22 wks	1 yr.
Deichmann, W. B., et al. 1958	3 dogs	Mongrel	2 F & 1 M	Capsule containing 0.6 mg. in corn oil soln./kg./d. 5 d./wk. for 1 yr.[719]	P. O	0	100%	1 yr.
Deichmann, W. B., et al., 1958	3 dogs	Mongrel	2 M & 1 F	Capsule containing 3.0 mg. in corn oil soln./kg./d., 5 d./wk. for 1 yr.[719]	P.O	0	100%	1 yr.
Deichmann, W. B., et al., 1958	24 rats	Sprague-Dawley.	12 āā	Dissolved in corn oil, 500 ppm. in diet for 2 yrs.[719]	P.O	0	Mean 549.3 d.—M & 504.5 d.—F.	2 yrs.
Deichmann, W. B., et al., 1958	24 rats	Sprague-Dawley.	12 āā	Dissolved in corn oil, 200 ppm. in diet for 2 yrs.[719]	P.O	0	Mean 525.6 d.—M & 476.5 d.—F.	2 yrs.
204. N-OCTADECYL ETHYL CARBAMATE $CH_3(CH_2)_7NHCOOC_2H_5$								
Roe and Salaman, 1955	20 mice	Albino "S" strain.	M	0.3 ml. of 6.7% soln. in ether; wkly. for 9 wks. (Total dose: 180.0 mg.[647]).	Skin	0	20 at 18 wks	At least 19 wks.
205. OCTAMETHYL PYROPHOSPHORAMIDE $[(CH_3)_2N]_2PO—O—PO[N(CH_3)_2]_2$								
Barnes, J. M., and Denz, F. A., 1954.	12 rats	Albino	M	1 ppm. added to dry diet for 13 wks.[721]	P.O	0[14]		13 wks.
Barnes, J. M., and Denz, F. A., 1954.	12 rats	Albino	M	3 ppm. added to dry diet for 13 wks.[721]	P.O	0[14]		13 wks.
Barnes, J. M., and Denz, F. A., 1954.	16 rats	Albino	8 M & 8 F	10 ppm. added to dry diet for 52 wks.[721]	P.O	0[14]	3 killed	52 wks.
Barnes, J. M., and Denz, F. A., 1954.	12 rats	Albino	M	10 ppm added to dry diet for 13 wks.[721]	P.O	0[14]		13 wks.
Barnes, J. M., and Denz, F. A., 1954.	16 rats	Albino	8 M & 8 F	50 ppm. added to dry diet for 52 wks.[721]	P.O	0[14]	100%	52 wks.
206. OLEIC ACID $CH_3(CH_2)_7CH=CH(CH_2)_7COOH$								
Holsti, P., 1959	44 mice	White	22 M & F	Undiluted twice daily	Skin	0	7 at 25 wks	25 wks.
Holsti, P., 1959	30 mice	White	15 M & F	40% soln. in chloroform once daily	Skin	0		31 wks.
Setala, K., et al., 1959	Mice	White	M	Undiluted, applied 6 times wkly. for duration of experiment.	Skin	0	100%	Up to 30 d.
207. OXALACETIC ACID HOOC—CO—CH_2COOH								
Salaman and Roe, 1956	20 mice	Albino "S" strain.		10 thrice wkly. applications of 5.3% soln. in acetone (total dose—160 mg.)[722]	Skin	2 (total of 3 pap.).	16 at about 28 wks.	Approx. 30 wks.

[14] No pathology given.

[647] 18 weekly applications of 0.3 ml. of 0.5% croton oil in acetone (at first alternated at 3-day intervals with test substance.)

[721] Contained 65% active ingredient.

[722] Weekly croton oil in acetone applications; 2 of 0.085% solution and 16 of 0.17% solution begun 22 days after initiation of treatment.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
208. POLYDIMETHYL SILOXANE $[—O—Si(CH_3)_2—]_x$								
Hueper, W. C., 1959	30 rats	Bethesda black		300 mg. ball, 5 mm dia. once[723]	I.P	Tumors[724, 725]	All survivors sacrificed.	2 yrs.
Hueper, W. C., 1959	30 rats	Bethesda black		300 mg. ball once[723]	S.C	Tumors[725, 726]	All survivors sacrificed.	2 yrs.
MacDonald, W. E., et al., 1960.	20 rats	Sprague-Dawley.	10 F & M	1.0% body wt. incorporated into diet.[727]	P.O	0	100%	90 d.
MacDonald, W. E., et al., 1960.	20 rats	Sprague-Dawley.	10 F & M	1.0% body wt. incorporated into diet.[726]	P.O	0	1 M died at 73 d	90 d.
MacDonald, W. E., et al., 1960.	20 rats	Sprague-Dawley.	10 F & M	1.0% body wt. incorporated into diet. [729]	P.O	0	100%	90 d.
MacDonald, W. E., et al., 1960.	20 rats	Sprague-Dawley.	10 F & M	1.0% body wt. incorporated into diet [730]	P.O	0	100%	90 d.
MacDonald, W. E., et al., 1960.	20 rats	Sprague-Dawley.	10 F & M	1.0% body wt. incorporated into diet.[731]	P.O	0	100%	90 d.
209. POLYDIMETHYL SILOXANE RUBBER $[—O—Si(CH_3)_2—]_x$								
Hueper, W. C., 1959	30 rats	Bethesda Black		300 mg.[732] cube, 5 mm. dia., once	I.P	0[733, 734]	All survivors sacrificed.	2 yrs.
Hueper, W. C., 1959	30 rats	Bethesda Black		300 mg.[732] cube once	S.C	Tumors[734, 735]	All survivors sacrificed.	2 yrs.
210. POLYETHYLENE $(—CH_2—CH_2—)_x$								
Oppenheimer, et al., 1953	Rats			Film embedded under skin.[736]	S.C	Tumors[737]	30 still alive	Experiment still in progress.
Oppenheimer, B. S., et al., 1953.	Rats			Film embedded under skin	S.C	Tumors[738]		1–2 yrs.
Oppenheimer, B. S., et al., 1953.	Rats			Film embedded under skin.[736]	S.C	Tumors[739]		1–2 yrs.
Oppenheimer, B. S., et al., 1953.	Mice			Film embedded under skin.[736]	S.C	Tumors[740]		1–2 yrs.

[723] Latex, gum (high viscosity).
[724] 2 lymph node reticulum cell sarcomas; 2 pulmonary mesotheliomas; 1 uterine carcinoma.
[725] Of 200 controls: 11 recticulum cell sarcomas; 1 pulmonary adenoma; 3 mammary adenofibromas; 1 renal carcinoma; 4 uterine carcinomas; 1 ovarian carcinoma. Controls received various treatments; no survival rates.
[726] 1 mammary adenofibroma; 1 dermal sarcoma.
[727] 10,000 centistokes viscosity.
[728] 60,000 centistokes viscosity.
[729] 1,000 centistokes viscosity.
[730] 350 centistokes viscosity.
[731] 50 centistokes viscosity.
[732] Silastic.
[733] 1 unspecified malignant tumor.
[734] Of 200 controls: 11 reticulum cell sarcomas; 1 pulmonary adenoma; 3 mammary adenofibromas; 1 renal carcinoma; 4 uterine carcinomas; 1 ovarian carcinoma. Controls received various treatments; no survival rates.
[735] 2 hepatic cholangiomas; 1 hepatic reticulum sarcoma; 2 pulmonary mesotheliomas; 1 mammary adenofibroma; 10 dermal spindle cell sarcomas.
[736] Pure.
[737] 1 malignant tumor.
[738] 10/80 (12.5%) malignant tumors.
[739] 7/38 (18.4%) malignant tumors.
[740] 3/29 (10.3%) malignant tumors.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
210. POLYETHYLENE (—CH_2—CH_2—) (Continued)								
Druckrey, H., and Schmahl, D., 1954.	23 rats	BD I, BD III & Wistar.	M & F	Implants 5 I.P., 2 S.C. each animal	I.P. & S.C.	Tumors[741]	14 at 15th mo	At least 20 mos.
Bering, et al., 1955	13 rats	Wistar	F	Implantation of 1.5–2 cm. sq. of polyethylene film.	S.C. in abdomen, subgaleally in skull.	1 cranial fibrosarcoma[742].	For all 63 animals treated in series, 49 alive at 18 mos.	25 mos.
Bering, et al., 1955	17 rats	Hisaw	M	Implantation of 1.5–2 cm. sq. of polyethylene film.	S.C. in abdomen, subgaleally in skull.	3 abdominal fibrosarcomas.	For all 63 animals treated in series, 49 alive at 18 mos.	25 mos.
Bering, et al., 1955	20 rats	Hisaw	F	Implantation of 1.5–2 cm. sq. of film.	S.C. in abdomen, subgaleally in skull.	Tumors[743]	For all 63 animals treated 49 alive at 18 mos.	25 mos.
Bering, et al., 1955	13 rats	Wistar	M	Implantation of 1.5–2 cm. sq. of polyethylene film.	S.C. in abdomen, subgaleally in skull.	0[744]	For all 63 animals treated in series, 49 alive at 18 mos.	25 mos.
Oppenheimer, et al., 1955	Rats	Wistar	M	Plain film, 1.5 cm. in width, 0.05 mm. in thickness.	S.C., abdominal wall.	10 (12.5%)[745]	80 at 392 d	At least 722 d.
Oppenheimer, et al., 1955	Rats	Wistar	M	Plain film 1.5 cm. in width, 0.02 mm. in thickness.	S.C., abdominal wall.	11 (20%)[745]	55 at 385 d	At least 742 d.
Oppenheimer, et al., 1955	Mice	Albino (Longacre).	M	Plain film, 1.5 cm. in width, 0.02 mm. in thickness.	S.C., abdominal wall.	3 (10.3%)[745]	29 at 343 d	At least 545 d.
Oppenheimer, et al., 1955	Rats	Wistar	M	Perforated film, 1.5 cm. in width, 0.02 mm. in thickness.	S.C., abdominal wall.	6 (14.6%)[745]	41 at 407 d	At least 784 d.
Oppenheimer, et al., 1955	Rats	Wistar	M	Plain film, 1.5 cm. in width, 0.07 mm. in thickness.[746]	S.C., abdominal wall.	3 (8.8%)[745]	34 at 352 d	At least 583 d.
Bering, E. A., Jr. and Handler, A. H., 1957.	50 hamsters	Golden		2 cm. sq. film	S.C. implant in abdominal wall between skin & muscle.	Tumors[747]	28 at 214 d	457 d.
Russell, F. E., et al., 1959	60 rats	Wistar	M & F	4 mm.×5 mm. & 0.16 mm thick film.	S.C. implant	0	51 at 300 d	Up to 800 d.
211. POLYETHYLENE GLYCOL $HOCH_2(CH_2OCH_2)_xCH_2OH$								
Berenblum and Haran, 1955	20 mice	Swiss	M	30 wkly. doses[748] of 0.3 ml.[459]	P.O. by stomach tube.	0	17 at 10 wks	30 wks.

[459] Pre-treatment: water only for 18 hours.
[741] 8 sarcomas; 1 fibroma.
[742] 2 unrelated mammary tumors.
[743] 3 abdominal fibrosarcomas; 1 cranial fibrosarcoma; 5 unrelated mammary tumors.
[744] 1 unrelated tumor.
[745] Majority were fibrosarcomas.
[746] High molecular.
[747] 1 transplantable malignant mesenchymal tumor at 442 days; 1 transplantable fibrosarcoma at 457 days.
[748] Polyethylene glycol 400.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
211. POLYETHYLENE GLYCOL $HOCH_2(CH_2OCH_2)\ CH_2OH$ (Continued)								
Berenblum and Haran, 1955	50 mice	Swiss	M	0.3 ml. PEG,[748] once.[749,750]	P.O. by stomach tube.	7 paps. of the forestomach.	22 at 10 wks	30 wks.
Berenblum and Haran, 1955	45 mice	C3H	M	0.3 ml. of PEG twice, at 1 wk. interval.[748,751,752]	P.O. by stomach tube.	7 paps. of the forestomach.	33 at 10 wks	30 wks.
Berenblum and Haran, 1955	50 mice	Swiss	M	0.3 ml. of PEG alone, once.[749,750]	P.O. by stomach tube.	7 paps. of the forestomach.	22 at 10 wks	30 wks.
Berenblum and Haran, 1955	50 mice	Swiss	M	0.3 ml. of PEG, once.[749,750]	P.O. by stomach tube.	7 paps. of the forestomach.	22 at 10 wks	30 wks.
Smyth, H. F., Jr., et al., 1955	4 dogs	Beagles & cocker spaniels.	M & F	2% in diet for 1 yr.[753]	P.O	0	All sacrificed	1 yr.
Smyth, H. F., Jr., et al., 1955	4 dogs	Foxhound, Doberman Pinscher, Kerry Blue Terrier, Beagle.	3 M & 1 F	2% in diet for 1 yr.[754]	P.O	0	All sacrificed	1 yr.
Smyth, H. F., Jr., et al., 1955	4 dogs	Beagles & cocker spaniels.	M & F	2% in diet for 1 yr[755]	P.O	0	All sacrificed	1 yr.
Smyth, H. F., Jr., et al., 1955	160 rats[758]	Wistar	80 āā	0.5, 1, 2, 4, & 8% in diet for 2 yrs[755]	P.O	0		90 d.
Smyth, H. F., Jr., et al., 1955	160 rats[757]	Wistar	80 āā	1, 2, 4, & 8% in diet for 2 yrs[754]	P.O	0		90 d.
Smyth, H. F., Jr., et al., 1955	420 rats[758]	Sherman	210 āā	0.02, 0.08, 0.4, 2, 4, & 8% in diet for 2 yrs.[753]	P.O	0		2 yrs.
Smyth, H. F., Jr., et al., 1955	50 rats[759]		25 āā	2, 4, 8, 16 & 24% in diet for 90 d.[760]	P.O	0		90 d.
Smyth, H. F., Jr., et al., 1955	50 rats[759]		25 āā	2, 4, 8, 16 & 24% in diet for 90 d.[755]	P.O	0		90 d.
Smyth, H. F., Jr., et al., 1955	50 rats[759]		25 āā	2, 4, 8, 16 & 24% in diet for 90 d.[753]	P.O	0		90 d.
Smyth, H. F., Jr., et al., 1955	50 rats[759]		25 āā	2, 4, 8, 16 & 24% in diet for 90 d.[751]	P.O	0		90 d.
Smyth, H. F., Jr., et al., 1955	50 rats[759]		25 āā	2, 4, 8, 16 & 24% in diet for 90 d.[752]	P.O	0		90 d.
Smyth, H. F., Jr., et al., 1955	50 rats[759]		25 āā	2, 4, 8, 16 & 24% in diet for 90 d.[753]	P.O	0		90 d.

[749] 30 weekly doses (.3 ml) of 3% croton oil in PEG begun post-treatment.
[750] Milk only for 3 days and water only for 18 hours prior to primary treatment. Water only for 18 hours prior to each secondary treatment.
[751] 30 weekly doses (.3 ml) of 1% croton oil in PEG begun post-treatment.
[752] No solid food for 18 hours prior to each treatment.
[753] Mean molecular weight 1,540.
[754] Mean molecular weight 400.
[755] Mean molecular weight 4,000.
[756] 32 rats/group.
[757] 40 rats/group.
[758] 70 rats/group.
[759] 10 rats/group.
[760] Mean molecular weight 6,000.
[751] Mean molecular weight 1,500.
[752] Mean molecular weight 1,000.
[753] Mean molecular weight 600.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
211. POLYETHYLENE GLYCOL $HOCH_2(CH_2OCH_2)\ CH_2OH$ (Continued)								
Smyth, H. F., Jr., et al., 1955	50 rats[759]		25 āā	2, 4, 8, 16 & 24% in diet for 90 d.[764]	P.O	0		90 d.
Smyth, H. F., Jr., et al., 1955	50 rats[759]		25 āā	2, 4, 8, 16 & 25% in diet for 90 d.[764]	P.O	0		90 d.
Smyth, H. F., Jr., et al., 1955	50 rats[759]		25 āā	2, 4, 8, 16 & 24% in diet for 90 d.[765]	P.O	0		90 d.
Setala, K., et al., 1959	Mice	White	M	Undiluted[766], 6 times wkly. for duration of experiment.	Skin	0		Up to 30 d.
Peirce, W. E. H., 1961	20 mice	Stock	F	0.25 ml. given once[767]	P.O., stomach tube.	Tumors[768, 769]	11 from 50–280 d.	Survivors still under observation.
212. POLYMETHYLACRYLATE $[CH_2{=}CHCOOCH_3]_n$								
Brunner, H., 1959	20 rats		M & F	Platelets 17 mm., 1–2 mm. thick, to which 2% of fibrin was added, 5 I.P., & 2 S.C. for each animal.	I.P. & S.C	Tumor [770]		17 mos.
Brunner, H., 1959	20 rats		M & F	Platelets 17 mm., 1–5 mm. thick to which 10% fibrin was added, 5 I.P. & 2 S.C. for each animal.	I.P. & S.C	Tumors [771]		17 mos.
Brunner, H., 1959	20 rats		M & F	Platelets 17 mm., 1–2 mm. thick to which 25% of fibrin was added, 5 I.P. & 2 S.C. for each animal.	I.P. & S.C	Tumors [772]		17 mos.
Brunner, H., 1959	20 rats		M & F	One platelet made of "cold polymerized" polymethylacrylate implanted I.P. one for each animal.	I.P	Tumors [773]		21 mos.
Brunner, H., 1959	30 rats		M & F	Sham operation		0		17 mos.
Brunner, H., 1959	23 rats		M & F	Sham operation		Tumors [774]		21 mos.
Brunner, H., 1959	20 rats		M & F	Platelets 17 mm. & 1–2 mm. thick to which 50% of fibrin was added, 5 I.P., & 2 S.C.	I.P. & S.C	Tumors [776]		17 mos.
Brunner, H., 1959	20 rats		M & F	Platelets 17 mm., 1–2 mm. thick in which 5% fibrin was added, 5 I.P. & 2 S.C. for each animal.	I.P. & S.C	Tumors[776]		17 mos.
Brunner, H., 1959	20 rats		M & F	Platelets 17 mm. & 1–2 mm. thick, 5 I.P. & 2 S.C. for each animal.	I.P. & S.C	Tumors [777]		17 mos.
213. POLYOXYETHYLENE DILAURATE $CH_3(CH_2)_{10}COOCH_2CH_2O(CH_2CH_2O)_xCH_2CH_2OOC(CH_2)_{10}CH_3$								
Krehl, W. A., et al., 1955	9 rats	Sprague-Dawley.	M	6% in diet for 505 d	P.O	0[778]		505 d.

[764] Mean molecular weight 300.
[765] Mean molecular weight 200.
[766] Carbowax 400.
[767] 40 weekly doses of 0.05 ml. lime oil by gavage begun 3 weeks post-treatment.
[768] 3 with 4 benign forestomach tumors.
[769] 20 untreated controls negative.
[770] 5 (38%) sarcomas.
[771] 3 (17%) sarcomas.
[772] 4 (29%) sarcomas.
[773] 2 with implant site sarcomas.
[774] 1 lipoma.
[776] 1 (8%) sarcoma.
[776] 2 (13%) sarcomas.
[777] 2 (10%) sarcomas, 1 with peritoneal tumor. Percent based on number living at time of first tumor.
[778] 1 unrelated fibrosarcoma.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
214. POLYOXYETHYLENE DIOLEATE $CH_3(CH_2)_7CH{=}CH(CH_2)_7COOCH_2CH_2O(CH_2CH_2O)_xCH_2CH_2OOC(CH_2)_7CH{=}CH(CH_2)_7CH_3$								
Krehl, W. A., et al., 1955	9 rats	Sprague-Dawley.	M	6% in diet for 508 d	P.O	0		508 d.
215. POLYOXYETHYLENE DISTEARATE $CH_3(CH_2)_{16}COOCH_2CH_2O(CH_2CH_2O)_xCH_2CH_2OOC(CH_2)_{16}CH_3$								
Krehl, W. A., et al., 1955	9 rats	Sprague-Dawley.	M	6% in diet for 508 d	P.O	0		508 d.
216. POLYOXYETHYLENE MONOLAURATE $CH_3(CH_2)_{10}COOCH_2CH_2O{-}(CH_2CH_2O{-})_xCH_2CH_2OH$								
Krehl, W. A., et al., 1955	9 rats	Sprague-Dawley.	M	6% in diet for 507 d	P.O	0		507 d.
217. POLYOXYETHYLENE MONOOLEATE $CH_2(CH_2)_7CH{=}CH(CH_2)_7COOCH_2CH_2O(CH_2CH_2O)_xCH_2CH_2OH$								
Krehl, W. A., et al., 1955	9 rats	Sprague-Dawley.	M	6% in diet for 513 d	P.O	0		513 d.
218. POLYOXYETHYLENE MONOSTEARATE $CH_3(CH_2)_{16}COOCH_2CH_2O{-}(CH_2CH_2O{-})_xCH_2CH_2OH$								
Eagle, E., and Poling, C. E., 1956.	10 hamsters			0.5 ml. daily for 8 doses.[779]	P.O	0	100%	Up to 11 wks.
Eagle, E., and Poling, C. E., 1956.	18 hamsters			1.0 ml. daily for 8 doses.[779]	P.O	0	4 died within 4 d	Up to 11 wks.
Eagle, E., and Poling, C. E., 1956.	10 hamsters			0.5 ml. daily for 8 doses.[780]	P.O	0	1 died at 3 d	Up to 11 wks.
Eagle, E., and Poling, C. E., 1956.	10 hamsters			1.0 ml. daily for 8 doses[780]	P.O	0	100%	Up to 11 wks.
Poling, C. E., et al., 1956	4 hamsters	Holtzman	M & F	25% in synthetic diet for 9 wks.[779,781]	P.O	0	3 died within 4 wks.	9 wks.
Poling, C. E., et al., 1956	5 hamsters	Holtzman	M & F	15% in synthetic diet for 33 wks.[779,781]	P.O	0	5 died	33 wks.
Poling, C. E., et al., 1956	10 hamsters	Holtzman	M	5% in bread diet for 39 wks.[779]	P.O	0	3 died	39 wks.
Poling, C. E., et al., 1956	8 rats	Holtzman	M	25% in synthetic diet for 21 wks.[779]	P.O	0	2 died, 1 sacrificed.	21 wks.
Poling, C. E., et al., 1956	10 hamsters	Holtzman	M	10% in bread diet for 39 wks.[779]	P.O	0	100%	39 wks.
Poling, C. E., et al., 1956	30 hamsters	Holtzman	M	5, 10 or 15% in bread diet for 39 wks.[780]	P.O	0	11 died	39 wks.
Poling, C. E., et al., 1956	10 hamsters	Holtzman	M	15% in bread diet for 39 wks.[779]	P.O	0	5 died	39 wks.

[778] 1 unrelated fibrosarcoma.
[779] Partial ester of commercial stearic acid and prefabricated polyethylene glycol.
[780] A partial ester of commercial stearic acid and mixed polyoxyethylene diols, approximately 44% free fatty acid and 53% oxyethylene.
[781] 25% lard diet for 4 weeks prior to treatment.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
219. POLYOXYETHYLENE-8-MONOSTEARATE								
Krehl, W. A., et al., 1955	9 rats	Sprague-Dawley.	M	6% in diet for 500 d	P.O	0		500 d.
Krehl, W. A., et al., 1955	6 cats		3 āā	20% in high fat diet for 36–367 d	P.O	0	1 died at 36 d	367 d.
Krehl, W. A., et al., 1955	12 rats	Sprague-Dawley.	M	10% in diet for 418 d	P.O	0		418 d.
Brush, M. K., et al., 1957	21 mice[782]		M & F	5 or 10% in (synthetic) diet for 3–4 mos.	P.O	0		4 mos.
220. POLYOXYETHYLENE (8) STEARATE $H(OCH_2CH_2O)_nCH_2CH_2OOC(CH_2)_{16}CH_3$								
Brush, M. K., et al., 1957	36 hamsters			1% in ("Fox Chow" basal) diet	P.O	0	5 dead at 1 yr	Up to 13 mos.
Brush, M. K., et al., 1957	36 hamsters			5% in ("Fox Chow" basal) diet	P.O	0	3 dead at 1 yr	Up to 13 mos.
Brush, M. K., et al., 1957	2 beagles		M	10% in (agar gel basal) diet for life	P.O	0	Still alive at end of experiment.	1 yr. or more.
221. POLYOXYETHYLENE (40) STEARATE								
Brush, M. K., et al., 1957	36 hamsters.[783]			2.5, 5.0 or 10% in ("Fox Chow" basal) diet.	P.O	0	5 dead at 1 yr	Up to 13 mos.
Brush, M. K., et al., 1957	36 hamsters.[783]			1.0, 2.5 or 5% in synthetic diet	P.O	0	100% at 200 d	1 yr. & 7 mos.
Brush, M. K., et al., 1957	36 hamsters			5% in ("Fox Chow" basal) diet	P.O	0	3 dead at 1 yr	Up to 13 mos.
Brush, M. K., et al., 1957	36 hamsters			1% in ("Fox Chow" basal) diet	P.O	0	3 dead at 1 yr	Up to 13 mos.
Brush, M. K., et al., 1957	31 mice[784]		M & F	2.5, 5 or 10% in (synthetic) diet for 3–4 mos.	P.O	0		4 mos.
Brush, M. K., et al., 1957	3 beagles		F	5 or 10% in (agar gel basal) diet for life.	P.O	0	Still alive at end of experiment.	1 yr. or more.
Brush, M. K., et al., 1957	2 beagles		M	5 or 10% in (agar gel basal) diet for life.	P.O	0	1 killed at 9 mos	1 yr. or more.
Brush, M. K., et al., 1957	32 mice[785]		F	2.5, 5, 10 or 15% in (synthetic) diet for 3 mos.– 1 yr.	P.O	0		1 yr.
222. POLYVINYL ALCOHOL $(CH_2{=}CHOH)_n$								
Oppenheimer, et al., 1955	Rats	Wistar	M	Implantation of piece 1.5 cm. in width.	S.C., abdominal wall.	3 (8.8%)[5345]	34 at 567 d	At least 857 d.
Russell, F. E., et al., 1959	25 rats	Wistar	M & F	4 mm. × 5 mm. and 0.16 mm. thick sponge.	S.C. implant	0	21 at 300 d	Up to 800 d.

[782] 9 and 12/group, respectively.
[783] 12/group.
[784] 11, 10 and 10/group, respectively.
[5345] Predominately fibrosarcomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
223. POLYVINYL CHLORIDE $(CH_2=CHCl)_n$								
Oppenheimer, B. S., et al., 1953.	Rats			Film embedded under skin	S.C	Tumors [788]		1–2 yrs.
Oppenheimer, et al., 1955	27 rats	Wistar	M	Perforated film, 1.5 cm. in width, 0.04 mm. in thickness.	S.C., abdominal wall.	0		
Oppenheimer, et al., 1955	Rats	Wistar	M	Plain film, 1.5 cm. in width, 0.04 in thickness.	S.C., abdominal wall.	17 (38.6%) [745].	44 at 189 d	At least 727 d.
Kogan, A. Kh., and Tugarinova, V. N., 1959.	15 rats	White	M & F	1.6×1.6 cm. & 0.1 cm. thick film folded to 0.4×0.6×0.2 cm. packet.	Implant near r. kidney.	0	9 at 12 mos	18 mos.
Kogan, A. Kh., and Tugarinova, V. N., 1959.	15 rats	White	M & F	1.6×1.6 cm. & 0.1 cm. thick perforated film.	Implant near r. kidney.	Tumors [787]	8 at 12 mos	18 mos.
Kogan, A. Kh., and Tugarinova, V. N., 1959.	20 rats	White	M & F	1.6×1.6 cm. & 0.1 cm. thick intact film.	Implant near r. kidney.	Tumors [788]	7 at 11 mos., 5 between 16–18 mos.	18 mos.
Kogan, A. Kh., and Tugarinova, V. N., 1959.	37 rats	White	M & F	As capsule of film	Attached to r. kidney.	Tumors [789]	16 at 7 mos	19 mos.
Kogan, A. Kh., and Tugarinova, V. N., 1959.	20 rats	White	M & F	3.2×3.2 & 0.2 cm. thick film cut to small pieces of 0.1×0.2 cm.	Implant near r. kidney.	0	4 between 11–17 mos.	17 mos.
Russell, F. E., et al., 1959	35 rats	Wistar	M & F	4 mm.×5 mm. & 0.16 mm. thick film	S. C. implant	Tumors [790]	30 at 300 d	Up to 800 d.
224. PROPARGYL METHANESULFONATE $HC=CCH_2OSO_2CH_3$								
Roe, F. J. C., 1957	20 mice[791]	Albino "S" strain.	M	10 wkly. paintings of 0.3 ml. at conc. of M/30 in acetone (Total dose, 13 mg.)[251]	Skin	4 (total of 4 pap.).	19 alive at 19 wks.	20 wks.
Roe, F. J. C., 1957	20 mice[791]	Albino "S" strain.	M	10 wkly. paintings of 0.3 ml. at concentration of M/6 in acetone (total dose, 65 mg.)[251]	Skin	1 (with 1 pap.).	19 alive at 19 wks.	20 wks.
226. N-PROPYLAMINE $CH_3CH_2CH_2NH_2$								
Hine, C. H., et al., 1960	30 rats[306]	Long-Evans	M	200 & 400 ppm. of vapor 7 hrs./d. for 50 exposures.	Inhalation	0	1 died in 400 ppm. group.	At least 50 d.

[251] 18 weekly applications, 0.3 ml. of 0.5% croton oil in acetone solution: begun 3 days post-treatment (first 9 alternated with test substance at 3–4 day intervals).
[305] 15/group.
[745] Majority were fibrosarcomas.
[785] From weaning to first gestation and lactation.
[785] 17/44 (38.6%) malignant tumors.
[787] 1 implant site fibrosarcoma at 18 months.
[788] 2 implant site fibrosarcomas at 17 months.
[789] 5 implant site fibrosarcomas (1 with mesenteric metastasis) (1st tumor after 7 months).
[790] 1 implant site spindle cell sarcoma at 580 days. 1 implant site fibroma.
[791] Age: 7–9 weeks.
[792] Higher concentrations (5–10%) given for first 5 weeks to produce and maintain ulceration.
[793] 1 with 2 epitheliomas; 1 with 1 epithelioma and 1 papilloma.
[794] Experiment remains in progress (4 survivors at 40 weeks).

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
227. PROPYL ALCOHOL C_3H_7OH								
Miyazaki, M., 1955	4 rats	Albino		10% in basal diet for 30 d	P.O	0		30 d.
Miyazaki, M., 1955	4 rats	Albino		10% in basal diet for 30 d., 20% for 30 more d.	P.O	0		60 d.
228. PROPYL CARBAMATE $H_2N—COOCH_2CH_2CH_3$								
Berenblum, I., et al., 1959	20 mice	Swiss	M & F	25 mg. as aqueous soln. once, 4 d. subsequent treated with twice-wkly. skin applications of 5% soln. croton oil in liq. paraffin for 40 wks.	P.O	Tumors[257, 795].	All sacrificed at 40 wks.	40 wks.
229. PROPYLENE GLYCOL $CH_3CHOHCH_2OH$								
Umeda, M., 1956	11 rats			1 cc. of soln. once a wk	S.C	0	10 at 300 d	At least 300 d.
Umeda, Masao, 1957	18 rats	Mixed		1 cc. once a wk. as a rule for 15 mos., amt. reduced to 0.5 cc., total of 88 wks. treatment.[796]	S.C. inj. in back at same site.	0[797]	11 survived 300 d. or more, longest survival 614 d.	614 d.
Hine, C. H., et al., 1958	30 rats	Long-Evans	M	3 inj. once a wk	Inj., neck	0	17 at 24 mos	24 mos.
230. PROPYLENE GLYCOL METHYL ETHER $CH_3\overset{OH}{\overset{|}{C}}HCH_2OCH_3$								
Rowe, V. K., et al., 1954	2 monkeys		M & F	300 to 400 ppm. daily, 5 d. per wk., 156 seven hr. exposures in 221 d.	Inhalation	0	100%	6 to 8 mos.
Rowe, V. K., et al., 1954	20 rats		M	3.0, 1.0, 0.3 & 0.1 ml./kg. in olive oil soln., 5 d. per wk.	Orally (intubation).	None		35 d.
Rowe, V. K., et al., 1954	16 guinea pigs.		M & F	300 to 400 ppm. daily, 5 d. per wk., 130 seven hr. exposures in 186 d.	Inhalation	0		6 to 8 mos.
Rowe, V. K., et al., 1954	40 rats		M & F	300 to 400 ppm. daily, 5 d. per wk., 140 seven hr. exposures in 200 d.	Inhalation	0		6 to 8 mos.
Rowe, V. K., et al., 1954	2 monkeys		M & F	800 ppm. (2.91 mg./liter), 147 seven hr. exposures in 205 d.	Inhalation	0	100%	205 d.
Rowe, V. K., et al., 1954	3 rabbits		M & F	800 ppm. (2.91 mg./liter), 132 seven hr. exposures in 186 d.	Inhalation	0	100%	186 d.
Rowe, V. K., et al., 1954	1 monkey		F	1,500 ppm. (5.46 mg./liter), 146 seven hr. exposures in 205 d.	Inhalation	0	100%	205 d.

[257] 46 croton oil controls with 11 papillomas and 2 pulmonary adenomas. Carcinogenicity questionable.

[795] 4/14 papillomas (avg. 0.3±0.1 tumor/mouse.) 4/14 with pulmonary adenomas (avg. 0.3±0.1 tumor/mouse).

[796] Product of highest purity.

[797] Injection site fibrosis. One with hypophyseal adenoma (probably spontaneous). No pathology of internal organs.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
230. PROPYLENE GLYCOL METHYL ETHER (Continued)								
Rowe, V. K., et al., 1954	4 rabbits		M & F	1,500 ppm. (5.46 mg./liter), 130 seven hr. exposures in 184 d.	Inhalation	0		184 d.
Rowe, V. K., et al., 1954	16 guinea pigs.		M & F	1,500 ppm. (5.46 mg./liter) 130 seven hr. exposures in 184 d.	Inhalation	0		184 d.
Rowe, V. K., et al., 1954	40 rats		M & F	1,500 ppm. (5.46 mg./liter) 141 seven hr. exposures in 198 d.	Inhalation	0		198 d.
Rowe, V. K., et al., 1954	2 monkeys		F	3000 ppm. (10.9 mg./liter), 146 seven hr. exposures in 205 d.	Inhalation	0		205 d.
Rowe, V. K., et al., 1954	2 rabbits		M & F	3000 ppm. (10.9 mg./liter), 130 seven hr. exposures in 184 d.	Inhalation	0	100%	184 d.
Rowe, V. K., et al., 1954	16 guinea pigs.		M & F	3000 ppm. (10.9 mg./liter), 130 seven hr. exposures in 184 d.	Inhalation	0	100%	184 d.
Rowe, V. K., et al., 1954	40 rats		M & F	3000 ppm. (10.9 mg./liter), 141 seven hr. exposures in 198 d.	Inhalation	0		198 d.
Rowe, V. K., et al., 1954	1 rabbit		F	6000 ppm. (21.8 mg./liter), 80 seven hr. exposures in 113 d.	Inhalation	0		113 d.
Rowe, V. K., et al., 1954	10 guinea pigs.		M & F	6000 ppm. (21.8 mg./liter), 80 seven hr. exposures in 113 d.	Inhalation	0	100%	113 d.
Rowe, V. K., et al., 1954	20 rats		M & F	6000 ppm. (21.8 mg./liter), 81 seven hr. exposures in 114 d.	Inhalation	0	9 survived 81 exposures.	114 d.
Rowe, V. K., et al., 1954	3 monkeys		M & F	10,000 ppm. (36.4 mg./liter), 2 males received 66 exposures in 91 d., 1 female recd. 26 exposures in 38 d.	Inhalation	0		91 d.
Rowe, V. K., et al., 1954	10 rats		M & F	10,000 ppm. (36.4 mg./liter), ½ hr. daily, 79 exposures in 107 d.	Inhalation	0		107 d.
Rowe, V. K., et al., 1954	10 rats		M & F	10,000 ppm. (36.4 mg./liter), 1 hr. daily, 78 exposures in 106 d.	Inhalation	0		106 d.
Rowe, V. K., et al., 1954	Rats		M & F	10,000 ppm. (36.4 mg./liter), two hrs. daily, 84 exposures in 116 d.	Inhalation	0		116 d.
Rowe, V. K., et al., 1954	13 rabbits		M	On adsorbent cotton pad, 2.0 or 4.0 ml./kg. 5 d. per wk. for 3 mos.	Skin	0	3 died	90 d.
Rowe, V. K., et al., 1954	4 rabbits		M & F	300 to 400 ppm. daily, 5 d. per wk., 156 seven hr. exposures in 221 d.	Inhalation	0	100%	6 to 8 mos.
231. PUTRESCINE $H_2N(CH_2)_4NH_2$								
Danneberg, P., and Nieper, H. A., 1956.	15 rats			10 mg.[798] daily in food (prepared wkly.) until total dose reached then returned on normal diet; total 2 rats; 1 g., 4 rats; 1–15 g. 9 rats 1.7–3 g.	P.O	0	730 d	1015 d.

[798] As hydrochloride.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
232. SEMICARBAZIDE $NH_2NHCONH_2$								
Kazuo, M., et al., 1960	Mice			0.1% in diet	P.O	Tumors[799]	8 at 7 mos	7 mos.
Mori, K., et al., 1960	Mice	dd	F	0.1%[798] in diet	P.O	Tumors[800]	8 at 7 mos., killed.	7 mos.
233. SODIUM CACODYLATE $(CH_3)_2AsOONa$								
Roe and Salaman, 1955	25 mice	Stock albino "S" strain.	M	0.3 ml. of 28% soln. in methyl alcohol, once (Total dose: 85.0 mg.[703]).	Skin	0	19 at 21 wks	At least 22 wks.
234. SODIUM THIOGLYCOLATE $HSCH_2COONa$								
Freeman, M. V., et al., 1956	5 rats	Weanling		100 mg./kg. 5 d./wk. for 24 wks	I.P	0[801]	2 died before 16 wks.	24 wks.
Freeman, M. V., et al., 1956	25 rats	Weanling	M	25, 50, 75, 100 & 125 mg./kg. respectively, 5 d./wk. for 12 wks.	I.P	0		12 wks.
235. SPERMINE HYDROCHLORIDE $H_2N(CH_2)_3NH(CH_2)_4NH(CH_2)_3NH_2 \cdot xHCl$								
Tabor, C. W., and Rosenthal, S. M., 1956.	7 mice			0.15% incorporated in powdered pellet Purina Dog Chow for 40 d.	P.O	0[14]		40 d.
Tabor, C. W., and Rosenthal, S. M., 1956.	12 mice			0.06% incorporated in powdered pellet Purina Dog Chow for 40 d., then given 0.2 mM/kg. single inj.	P.O. & I.P	0	All died when injected.	40 d.
Tabor, C. W., and Rosenthal, S. M., 1956.	15 mice		F	0.22 mM/kg. twice a wk. for 48–55 d.	I.P	0[802]	1 died, 1 sacrificed	55 d.
Tabor, C. W. and Rosenthal, S. M., 1956.	15 mice		F	0.22 mM/kg. 5 times a wk. for 23–47 d.	I.P	0[802]	11 died	47 d.
Tabor, C. W., and Rosenthal, S. M., 1956.	15 mice		F	0.15 mM/kg. 5 times a wk. for 65–75 d.	I.P	0[802]	100%	75 d.
Tabor, C. W., and Rosenthal, S. M., 1956.	15 mice		F	0.1 mM/kg. 5 times a wk. for 58–63 d.	I.P	0[802]	100%	63 d.
Tabor, C. W. and Rosenthal, S. M., 1956.	15 mice		F	0.075 mM/kg. 5 times a wk. for 21–57 d.	I.P	0[802]	100%	57 d.
236. STEARIC ACID $CH_3(CH_2)_{16}COOH$								
Deichmann, W. B., et al., 1958.	10 rats	Sprague-Dawley.	5 āā	3,000 ppm. in basic diet for 209 d	P.O	0	Avg. 107 d.—M & 127–F.	209 d.
Hieger, I., 1959	51 mice	Stock		Unspecified amt. in olive oil	S.C	0	32 at 12 mos., 2 at 24 mos.	24 mos.

[703] 18 weekly applications of 0.3 ml. of 0.5% croton oil in acetone; begun 3 weeks after initiation of treatment.
[798] As hydrochloride.
[799] 75% incidence. 3% incidence in 36 controls surviving 7 months.
[800] 6 with pulmonary adenomas (2 multiple) at 7 months.
[801] Thyroid hyperplasia.
[802] Renal tubular necrosis.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
237. TEFLON $(—CF_2—CF_2—)_x$								
Oppenheimer, B. S., et al., 1953.	Rats			Film embedded under skin	S.C	Tumors[803]	15 still alive	Experiment still in progress.
Oppenheimer, et al., 1955	Rats	Wistar	M	Plain film, 1.5 cm. in width, 0.02 mm. in thickness.	S.C., abdominal wall.	8 (23.5%)[745]	34 at 439 d	At least 748 d.
Oppenheimer, et al., 1955	Rats	Wistar	M	Perforated film, 1.5 cm. in width, 0.02 mm. in thickness.	S.C., abdominal wall.	6 (18.7%)[745]	32 at 526 d	At least 728 d.
Russell, F. E., et al., 1959	65 mice	Wistar	M & F	4 mm. ×5 mm. & 0.16 mm. thick disc	S.C. implant	Tumors[804]	55 at 300 d	Up to 800 d.
238. TETRAETHYLTHIURAM DISULFIDE $(C_2H_5)_2NC(S)S—S—C(S)N(C_2H_5)_2$								
Telkka, A., and Kivalo, E., 1958.	10 rats	Sprague-Dawley albino.	F	25 mg./kg. daily in basal diet for 30 d.	P.O	0[805]	Sacrificed	30 d.
239. N,N,N′,N′-TETRAMETHYLPROPANE-1,3-DIAMINE $(CH_3)_2N(CH_2)_3N(CH_3)_2$								
Rockhold, W. T., et al., 1957	3 rabbits			0.01 ml. in one eye	In eye	0[806]	100%	6 mos.
Rockhold, W. T., et al., 1957	3 rabbits			0.01 ml. in one eye, washed 2 sec. later with 20 ml. lukewarm water.	In eye	0	100%	6 mos.
Rockhold, W. T., et al., 1957	3 rabbits			0.01 ml. in one eye, washed 4 sec. later with 20 ml. lukewarm water.	In eye	0	100%	6 mos.
Rockhold, W. T., et al., 1957	2 dogs	Mongrel		Avg. conc. of 12 ppm. of vapor in a 475 liter chamber, 6 hrs./d., 5 d./wk. for 30 d.	Inhalation	0	All sacrificed	30 d.
Rockhold, W. T., et al., 1957	4 rabbits	Albino		Avg. conc. of 12 ppm. of vapor in a 475 liter chamber, 6 hrs./d., 5 d./wk. for 30 d.	Inhalation	0	All sacrificed	30 d.
Rockhold, W. T., et al., 1957	18 rats	Albino		Avg. conc. of 12 ppm. of vapor in a 475 liter chamber, 6 hrs./d., 5 d./wk., for 30 d.	Inhalation	0	All sacrificed	30 d.
240. N,N,N′,N′-TETRAMETHYL PROPENE-1,3-DIAMINE $(CH_3)_2NCH=CHCH_2N(CH_3)_2$								
Rockhold, W. T., et al., 1957	3 rabbits			0.01 ml. in one eye, washed 2 sec. later with 20 ml. lukewarm water.	In eye	0[807]	100%	6 mos.
Rockhold, W. T., et al., 1957	3 rabbits			0.01 ml. in one eye, washed 4 sec. later with 20 ml. lukewarm water.	In eye	0[807]	100%	6 mos.
Rockhold, W. T., et al., 1957	3 rabbits			0.01 ml. in one eye	In eye	0[807]	100%	6 mos.

[745] Majority were fibrosarcomas.
[803] 4 malignant tumors.
[804] 2 implant site spindle cell sarcomas. Induction at 659 (minimum) days.
[805] Thyroid hyperplasia.
[806] Ocular lesions at 6 months.
[807] Inflammatory ocular lesions at 6 months.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
241. TETRANITROMETHANE $C(NO_2)_4$								
Horn, H. J., 1954	19 rats			6.35 ppm. of air, 6 hrs. per d., 5 d./wk.	Inhalation	0	11 died	6 mos.
Horn, H. J., 1954	2 dogs			6.35 ppm. of air, 6 hrs. per d., 5 d. per wk. for 6 mos.	Inhalation	0	100%	6 mos.
242. THIOACETAMIDE CH_3CSNH_2								
Gupta, D. N., 1955	150 rats			1 g. dissolved in 60 ml. absolute alcohol & mixed with diet, fed ad libitum for 10 mos.	P.O	Tumors[808]	50 died by 9th wk. 36 killed from 9–23 wk. interval.	10 mos.
Gupta, D. N., 1956	10 rats	Wistar-Albino	M & F	32 mg. % dissolved in alcohol, in diet for 4–21 wks.[809]	P.O	0[810]	Killed from 22–36 wks.	36 wks.
Gupta, D. N., 1956	Rats	Wistar-Albino	M & F	32 mg. % dissolved in alcohol, in diet for 22 wks.[811]	P.O	0[812]	Killed 10 d. after surgery.	About 23 wks.
Gupta, D. N., 1956	Rats	Wistar-Albino	M & F	32 mg. % dissolved in alcohol, added to diet.	P.O	Tumors[813]	Killed at various intervals.	52 wks.
Lopez, M., 1956	40 rats	Albino (Italian).	M	0.02% in the diet	P.O	Tumors[814]	Sacrificed at intervals.	Up to 6 mos.
Martini, M., and Caravaglios, R., 1956.	90 rats	Albino	M	0.03% in the diet	P.O	Tumors[814]	Sacrificed at intervals.	Up to 5 mos.
Miyazaki, H., et al., 1956	50 rats	White	30 M & 20 F.	0.035% in basal diet for 300 d	P.O	0[815]		300 d.
Lopez, M., 1957	80 rats	Albino	M	0.025% in the diet	P.O	0[816]	Sacrificed at intervals.	Up to 6 mos.
Grant, H. C., and Rees, K. R., 1958.	Rats	Norwegian hooded.	M	330 mg. dissolved in 20 ml. alcohol, mixed in 1 kg. food for 6 mos.	P.O	0[817]		At least 6 mos.
Petzold, H., Dent. Ztschr. f. Verdau.—and Stoffw. *20*, 257–264 (1960).	21 rats		M & F	0.05 g. 2 times wkly	Intratracheal	0		3 mos.
243. THIOUREA $CS(NH_2)_2$								
Gillman, J., et al., 1954	8 rats	Wistar	M	([818])	P.O	Tumors[819]	82–84 d	84 d.
Gillman, J., et al., 1954	5 rats	Wistar	F	0.5% in a stock diet.[818]	P.O	Tumors[819]	86–90 d	90 d.

[808] 18 with cholangeal carcinoma; 5 with cholangeal cystic dilatation; 22 with cholangiofibrosis.
[809] Normal diet resumed.
[810] Lesions of treatment diet group regress to normal for up to 7 weeks.
[811] Then partial hepatectomy, resumed same diet.
[812] Liver regeneration study.
[813] Cholangeal tumors; subsequently 4 with ovarian metastases which resembled hepatoma, cholangeal adenoma, and cholangiocarcinoma.
[814] Histological study of cholangeal proliferation, up to cholangioadenomas.
[815] Diffuse hepatic fibrosis in survivors (over 200 days).
[816] Cholangeal proliferation and biliary cirrhosis.
[817] Sacrificed before sufficient time to develop hepatomas.
[818] Stock diet: 48% flour, 20% dried skimmed milk, 17.2% mealie meal, 2.6% brewer's yeast, 1.7% salts, 6.0% fats, 2.0% raw linseed oil, 2.0% vitaminized oil.
[819] Cholangeal cystadenomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
243. THIOUREA $CS(NH_2)_2$ (Continued)								
Gillman, J., et al., 1954	4 rats	Wistar	M	0.5% in a stock diet,[818] given vegetables from 120 d. onward.	P.O.	Tumors[819]	All sacrificed on 160 d.	160 d.
Gillman, J., et al., 1954	4 rats	Wistar	F	0.5% in a stock diet,[818] given vegetables from 120 d. onward.	P.O.	Tumors[819]	All sacrificed on 160 d.	160 d.
Gillman, J., et al., 1954	13 rats	Wistar	M & F	0.5% in the diet	P.O.	0	82–90 d	
Gillman, J., et al., 1954	8 rats	Wistar	M & F	0.5% in the diet	P.O.	0	Sacrificed at 160 d.	160 d.
Gillman, J., et al., 1954	36 rats	Wistar	M & F	0.5% in the diet	P.O.	0	40–107 d	
Gillman, J., et al., 1954	40 rats	Wistar	M & F	0.5% in the diet	P.O.	0	53–126 d	
Gillman, J., et al., 1954	16 rats	Wistar	M	0.5% incorporated in Coward's diet.[303]	P.O.		40–89 d	89 d.
Gillman, J., et al., 1954	20 rats	Wistar	F	0.5% incorporated in Coward's diet.[303]	P.O.	0	49–101 d	101 d.
Gillman, J., et al., 1954	21 rats	Wistar	F	0.5% incorporated in Coward's diet.[303]	P.O.	0	54–126 d	126 d.
Gillman, J., et al., 1954	19 rats	Wistar	M	0.5% incorporated in Coward's diet.[303]	P.O.	0	53–117 d	117 d.
Rosin, A., and Rachmilewitz, M., 1954.	12 rats	Albino	M & F	3.0, 4.0, 4.0 cc. of 10% aqueous soln. on 3 consecutive d./wk. for 6 mos. then as 0.2% in drinking water.	I.P. & P.O.	Tumors[820]	6 at 1 yr	16 mos.
Amyia B. Kar, et al., 1955	6 rats	Albino	M	0.25–100 mg. daily for 45 d. then as 1% soln. in milk for 42 d.	S.C. & P.O.	0	All sacrificed	88 d.
Rosin and Unger, 1957	16 rats	Albino, random-bred.	M	3.4 & 4 ml. of a 10% aqueous soln. on 3 consecutive d. each wk. for the first 6 mos., 0.2% soln. in drinking water for remainder of experiment.	I.P. inj. (first 6 mos.), P.O. in drinking water (for last 16 mos.).	10[821]	12 alive at 12 mos.	22 mos.
Rosin and Unger, 1957	19 rats	Albino, random-bred.	M	0.2% soln. in drinking water	P.O.	18[822]	19 alive at 22 mos.	At least 26 mos.
244. TRIALLYLAMINE $(CH_2{=}CHCH_2)_3N$								
Hine, C. H., et al., 1960	45 rats[306]	Long-Evans	M	50, 100 & 200 ppm. of vapor 7 hrs./d. for 50 exposures.	Inhalation	0	1 died in 100 ppm. group, 6 died in 200 ppm. group.	At least 50 d.

[303] Coward's diet: 71% dextrinized corn starch, 15% casein, 10% brewer's yeast, 4% salts.
[306] 15/group.
[820] 3 facial squamous cell carcinomas and 2 facial mixed carcinoma-sarcoma.
[821] Occurred 12–18 months after initial treatment: 6 with otic epidermoid carcinoma (1 bilateral); 3 with meibomian gland epidermoid carcinoma; 1 with otic and meibomian epidermoid carcinoma.
[822] Occurred 4½–26 months after initial treatment: 6 with unilateral otic epidermoid carcinoma; 6 with meibomian gland epidermoid carcinoma; 5 with otic-meibomian epidermoid carcinoma; 1 with facial (nose) myxoma.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
245. TRIBUTYL PHOSPHOROTRITHIOATE $(C_4H_9S)_2P(O)SC_4H_9$								
Murphy, S. D., and DuBois, K. P., 1959.	15 rats[823]	Sprague-Dawley.	F	50, 75 & 100 mg./kg. body wt./d. up to 60 d.	I.P	0[196]	1 died at 9 d.—75 mg. 5 died within 30 d.—100 mg.	60 d.
246. TRICAPRYLIN $C_3H_5[CH_3(CH_2)_6COO]_3$								
Steiner, P. E., 1954	50 mice	C57BL	M & F	1 cc	S.C. (interscapular).	0	31 at 19 mos	19 mos.
Hieger, I., 1959	30 mice	C57		Unspecified	S.C	Tumors[824]	17 at 12 mos., 2 at 24 mos.	24 mos.
Miller, E. C., and Miller, J. A., 1960.	20 rats	Albino Holtzman.	M	0.1 ml. once	S.C	0	8 at 16 mos	16 mos.
Miller, E. C., and Miller, J. A., 1960.	30 mice	Albino Sutter	F	0.1 ml. once	S.C	0	5 at 13 mos	13 mos.
Miller, E. C., and Miller, J. A., 1960.	27 mice	Albino Taconic Farms.	F	0.1 ml. once	S.C	0	14 at 13 mos	13 mos.
Payne, W. W., 1960	52 mice	C57BL	26 F & M	0.2 ml. once	S. C. neck	0		Up to 22 mos.
247. TRICHLOROETHYLENE $CHCl{=}CCl_2$								
Mosinger, M., 1955	8 cats			20 ppm.[825] 75 min. daily	Pulmonary—inhalation.	0	100%	6 mos.
249. TRIETHYL TIN HYDROXIDE $(C_2H_5)_3SnOH$								
Stoner, H. B., et al., 1955	Rabbits			20, 40 & 80 ppm. in diet	P.O	0		
Stoner, H. B., et al., 1955	3 hens			Up to 160 ppm. in diet for 15 wks	P.O	0		At least 15 wks.
Stoner, H. B., et al., 1955	Rats	Albino		20 ppm. in diet for 24 d., off 8 d., resumed 20 ppm. diet.	P.O	0		At least 39 d.
Stoner, H. B., et al., 1955	Rats	Albino		20 ppm. in diet for about 40 d., 40 ppm. for about 10 d., 80 ppm. for about 10 d.	P.O	0	About 50% died at 40 d.	About 60 d.
Stoner, H. B., et al., 1955	Rats	Albino		20 ppm. in diet for 3–4 wks., returned to normal diet.	P.O	0[825]		About 8 wks.
Magee, P. N., et al., 1957	Rats	Porton albino		20 ppm. dissolved in arachis oil	P.O	0		
Magee, P. N., et al., 1957	18 rats	Porton albino		20 ppm. dissolved in arachis oil in diet for 2 wks., then 10 ppm. for 6 wks.	P.O	0	11 died in 3rd wk	At least 6 mos.

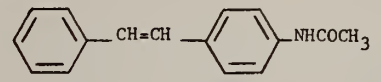
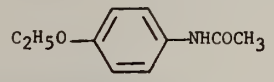
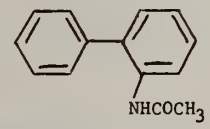
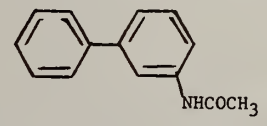
[196] Toxicity study.
[823] 5/group.
[824] 1 sarcoma.
[825] Technical grade.
[826] Recovered on resumption normal diet.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
250. TRIETHYLTRITHIOPHOSPHITE $(C_2H_5S)_3P$								
Rockhold, W. T., et al., 1955	Rabbits			0.1 ml. in conjunctival sac, then washed with a 1% soln. of silver nitrate, 2 secs. after application.[827]	Eye	0		1 mo.
Rockhold, W. T., et al., 1955	Rabbits			0.1 ml. in conjunctival sac, then washed with 20 ml. dist. water at either 2 or 4 secs. after.[827]	Eye	0	100%	1 mo.
251. TRIMETHYLTRITHIOPHOSPHITE $(CH_3S)_3P$								
Rockhold, W. T., et al., 1955	8 rabbits		M	Avg. of 2.5 mg./m. vapors in 57 cu.m. dynamic chamber, 6 hr./d., 5 d./wk., for 1 mo.[828]	Inhalation	0[829]	Killed at intervals	6 wks.
Rockhold, W. T., et al., 1955	29 rats	Albino-Wistar	M	Avg. of 215 mg./m. vapors in 57 cu.m. dynamic chamber, 6 hrs./d., 5 d./wk., for 1 mo.[828]	Inhalation	0[830]	Killed at intervals	6 wks.
Rockhold, W. T., et al., 1955	3 dogs	Mongrel	M	Avg. of 2.5 mg./m. vapors in 57 cu. m. dynamic chamber, 6 hrs./d., 5 d./wk., for 1 mo.[828]	Inhalation	0[829]	1 killed at end of 1st, 4th & 6th wks.	6 wks.
Rockhold, W. T., et al., 1955	10 rats[831]			([828])	P.O., stomach tube.	0[14]	Several died 2–14th d.	30 d.
Rockhold, W. T., et al., 1955	Rabbits			0.1 ml. in conjunctival sac, then washed with 20 ml. dist. water at either 2 or 4 secs. after.[828]	Eye	0	100%	1 mo.
Rockhold, W. T., et al., 1955	Rabbits			0.1 ml. in conjunctival sac, then washed with a 1% soln. of silver nitrate, 2 secs. after application.[828]	Eye	0		1 mo.
252. TRIPROPYLENE GLYCOL METHYL ETHER $CH_3CH(OH)CH_2—O—CH(CH_3)—CH_2—O—CH(CH_3)—CH_2OCH_3$								
Rowe, V. K., et al., 1954	Rabbits		M	On adsorbent cotton pad, 1.0, 3.0 or 5.0 ml./kg. 5 d. per wk. for 3 mos.	Skin	0	100%	90 d.
253. TRIS(β-CHLOROETHYL)AMINE HYDROCHLORIDE $N(CH_2CH_2Cl)_3 \cdot HCl$								
Friederici, L., 1955	6 rabbits (2.5–3.5 kg. body wt.).		M & F	0.5–2 mg./kg. in saline.[832]	I.V	0	1 at 60th d	At least 60 d.

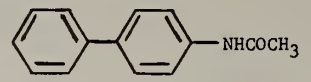
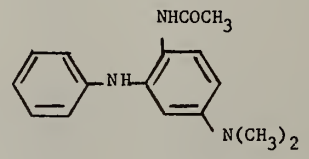
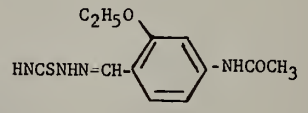
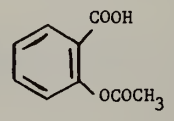
[14] No pathology given.
[827] Phosphorus (13.9%), and sulfur impurities (46.5%).
[828] Contained phosphorus and sulfur impurities.
[829] No histopathologic changes.
[830] 1 with renal tubular lesions; pathogenesis uncertain (died on 9th day).
[831] 5 groups of 10.
[832] Sinalost.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
254. TRISTEARIN $C_3H_5[CH_3(CH_2)_{16}COO]_3$								
Hieger, I., 1959	50 mice	Stock		5:30 parts in olive oil	S.C	Tumors[824]	33 at 12 mos., 3 at 24 mos.	24 mos.
255. URETHANE PHOSPHATE $(OH)_2P(O)—NH—COOC_2H_5$								
Berenblum, I., et al., 1959	33 mice	Swiss	M & F	5 mg. in saline soln. once, 4 d. subsequent treated with twice-wkly. skin application of 5% soln. croton oil in liq. paraffin for 40 wks.	I.P	Tumors[257, 833].	All sacrificed at 40 wks.	40 wks.
256. ZINC DIMENTHYLDITHIOCARBAMATE $[(CH_3)_2NCSS]_2Zn$								
Hodge et al., 1956	3 young adult dogs.	Beagle	M & F	25 mg./kg./d. in food	P.O	0	1 died at 5 mos	1 yr.
Hodge et al., 1956	2 young adult dogs.	Beagle	M & F	5 mg./kg./d. in food	P.O	0		1 yr.
Hodge et al., 1956	2 young adult dogs.	Beagle	M & F	0.5 mg./kg./d. in food	P.O	0		1 yr.
Hodge, et al., 1956	50 weanling rats.	Rochester	M & F	0.25% in diet	P.O	Tumors[834]	600–700 d	2 yrs.
Hodge et al., 1956	50 weanling rats.	Rochester	M & F	0.025% in diet	P.O	0	600–700 d	2 yrs.
Hodge et al., 1956	50 weanling rats.	Rochester	M & F	0.0025% in diet	P.O	0	600–700 d	2 yrs.
Hodge, H. C., et al., 1956[664]	6 dogs	Beagle	3 ää	0.5, 5.0 & 25 mg./kg./d. in diet for 1 yr.	P.O	0		1 yr.
Hodge, H. C., et al., 1956[664]	150 rats		M & F	0.0025, 0.025 or 0.25% in diet for 2 yrs.	P.O	0		2 yrs.

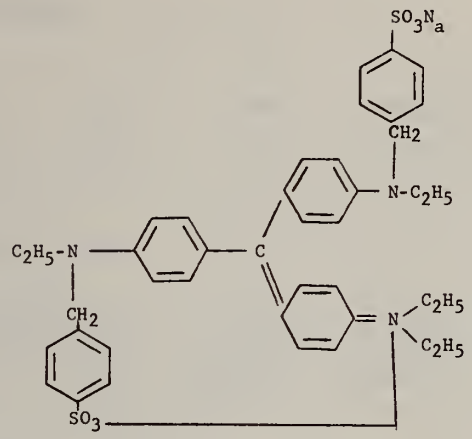
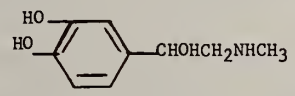
[257] 46 croton oil controls with 11 papillomas and 2 pulmonary adenomas. Carcinogenicity questionable.
[564] An abstract.
[824] 1 sarcoma.
[833] 8/24 with papillomas (avg. 0.4±0.1 tumor/mouse). 2/16 with pulmonary adenomas (avg. 0.1±0.08 tumor/mouse).
[834] 2 thyroid adenomas (possible relationship to treatment).

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
257. 4-ACETAMINOSTILBENE 								
Schmahl, D., and Mecke, R., Jr., 1956.	20 rats	Wistar II		0.6 mg. daily in food	P.O	Tumors[835]	12 at 180 d., time first tumor.	
258. ACETOPHENETIDIN 								
Schmahl, D., and Reiter, A., 1954.	Rats (30/group).	BDI, BDIII	M & F	40–50 mg. daily with food for 600 d., total dose 22 g./rat.	P.O	0[836]	Avg. 770 d	At least 770 d.
259. 2-ACETYLAMINOBIPHENYL 								
Miller et al., 1956	9 rats	Albino	M	1.62 mM/kg. diet	P.O	1 mammary gland tumor.[837]	6 at 8 mos	10 mos.
Miller, et al., 1956	9 rats	Albino	F	1.62 mM/kg diet	P.O	Tumor [837]	9 at 8 mos	10 mos.
260. 3-ACETYLAMINOBIPHENYL 								
Miller et al., 1956	9 rats	Albino	F	1.62 mM/kg. diet	P.O	Tumors [838]	9 at 8 mos	10 mos.
Miller et al., 1956	9 rats	Albino	M	1.62 mM/kg diet	P.O	0	8 at 8 mos	10 mos.

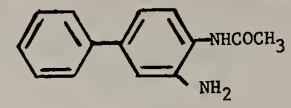
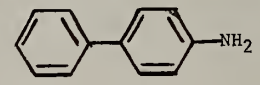
[835] 3 otic carcinomas; 1 hepatic carcinoma; 1 reticuloendothelial sarcoma; 3 mammary adenomas.
[836] 1 with benign osteochondroma after 1 year.
[837] 1 uterine leiomyosarcoma at 10 months.
[838] 2 mammary tumors. 1 subcutaneous fibrosarcoma at 10 months.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
261. 4-ACETYLAMINOBIPHENYL 								
Miller et al., 1956	21 rats	Albino	F	1.62 mM/kg. diet	P.O	Tumors [839]	20 at 8 mos	10 mos.
Miller et al., 1956	8 rats	Albino	M	1.62 mM/kg. diet	P.O	0	8 at 8 mos	12 mos.
Miller et al., 1956	10 rats	Albino	F	1.62 mM/kg. diet	P.O	Tumors [840]	10 at 8 mos	12 mos.
Miller et al., 1956	15 rats	Albino	M	1.62 mM/kg. diet	P.O	0	11 at 8 mos	10 mos.
262. 2-ACETYLAMINO-5-DIMETHYLAMINODIPHENYLAMINE 								
Miller, J. A., et al., 1957	15 adult rats	Albino, Holtzman.	M	Dissolved in corn oil, 2.67 mM/kg. of diet for 8 mos.	P.O	0	13 alive after 8 mos.	11 mos.
263. 4-ACETYLAMINO-2-ETHOXYBENZALDEHYDE THIOSEMICARBAZONE 								
Sano, S., 1954	3 rabbits	Domestic		200 mg. for 4 d		0		12 wks.
264. ACETYLSALICYLIC ACID 								
Salaman and Roe, 1956	20 mice	Albino "S" strain.		10 thrice wkly. applications of 18% soln. in acetone (total dose—0.54 g.)[841]	Skin	3 (total of 5 pap.).	19 at about 28 wks.	Approx. 30 wks.

[839] 19 mammary tumors; 2 otic tumors; 2 enteric tumors.
[840] 10 mammary tumors; 1 otic tumor.
[841] Weekly croton oil in acetone applications; 2 of 0.08% and 16 of 0.17% begun 25 days post-treatment.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
265. ACID VIOLET 5 BN 								
Umeda, Masao, 1957	16 rats	Mixed	M & F	1 cc. of 5.0 g./10 cc. dist. water soln. once a mo. for 3 mos., reduced to 0.5 cc. for about 9 mos., then discont. Total of 225 mg.[842]	S.C. inj. in back.	0[843]	8 survived 200 d. or more.	426 d.
266. ADRENALIN 								
Deane, H. W., and Lyman, C. P., 1957.	10 hamsters		5 āā	0.1 ml. of 1:2500 soln. in peanut oil for 42 d.	I.M.	0		42 d.
Von Burstin, D., 1958	Rabbits	Albino & brown.		0.2 cc. 1% soln. of adrenalin twice a wk.	Inj. under the conjunctiva.	Tumors[844]		At least 1½ yrs.
Von Burstin, D., 1958	Rabbits	Albino & brown.		1% soln. of adrenalin once daily	Painting on conjunctival sack.			2½ yrs.
MacDonald, R. A., 1959	6 rats	Sprague-Dawley.	M	0.2 ml. of 1:1000 (1 mg./1 kg.) for 73 d.	S.C.	0[845]		73 d.

[842] Acid violet, color Index No. 698.
[843] 1 with thymic hypertrophy; 1 with cysticercus pulmonary sarcoma (both spontaneous).
[844] 2 with injection site pigment tumor (not nevi or melanomas).
[845] Injection site fibrosis.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
267. 3-AMINO-4-ACETYLAMINOBIPHENYL 								
Miller et al., 1956	9 rats	Albino	F	1.62 mM/kg. diet	P.O	Tumors[846]	9 at 8 mos	10 mos.
Miller et al., 1956	6 rats	Albino	M	1.62 mM/kg. diet	P.O	0	4 at 8 mos	10 mos.
268. 4-AMINODIPHENYL 								
Walpole, A. L., et al., 1954	23 rats	Wistar	11 M, 12 F	4.0–5.0 g./kg. total dose	S.C	Tumors[847]		Up to 300 d.
Walpole, A. L., et al., 1954	2 dogs, 7 mos. old.	Beagle (litter mates).	M	In capsule once daily, six d. wk. at varying doses from 27–11–50 to 1–1–52. Then from 6–30–52 to 2–10–53, 5 mg./kg. of body wt. Total dose of 30 to 34 g.	P.O	Tumors[848]	Killed 2 yrs., 9 mos. after beginning of experiment.	2 yrs., 9 mos.
Hendry, J. A., et al., 1955	22 rats[849]		M & F	Mean total dose: 456 mg./100 g. body wt. in arachis oil B.P. soln. for mean duration of dosing 306 d.	S.C	Tumors[850]	Avg. 477 d	At least 577 d.
Bonser et al., 1956	35 mice	Albino		Paraffin wax pellet.[851]	Implantation into lumen of the bladder.	3 (invasive carcinomas of the bladder).	34 alive at 40 wks.	40 wks.
Deichmann, W. B., et al., 1956.	4 dogs	Mongrel	F	0.3 g./d. in horsemeat for 1 yr. & in a capsule during 2nd yr., up to 29 mos.	P.O	Tumors[852]	1 died at 25 mos. & 1 wk.	29 mos.
Deichmann, W. B., and Radomski, J. L., 1956.	4 dogs			8.2–8.4 g./kg. in food daily	P.O	Tumors[853]	1 at 25 mos	29 mos.
Deichmann, W. B., et al., 1958.[854]	4 dogs	Mongrel	F	Small quantity in horsemeat 1st yr., 0.3 g. 3 times wkly. in capsule for 2nd yr., 8.2–14.1 g./kg. total dose by time of appearance of tumors.	P.O	4[855]	3 died in 4–13 mos., after appearance of tumor.	43 mos.
Coplan, M. M., 1960	4 dogs	Mongrel	F	Total dose of 87.5, 129.5, 94.5, & 114 g. per animal, respectively.	P.O	Tumors[856]	All died 4–13 mos. after tumor formation.	At least 38 mos.

[846] 1 mammary fibroadenoma; 1 uterine angiomatous polyp at 10 months.

[847] 7 enteric tumors; 1 leukemia; 3 mammary tumors. S.C. arachis oil controls developed tumors (reported elsewhere).

[848] Multiple urinary bladder tumors (benign and malignant). Both transitional cell and anaplastic tumors.

[849] 1 male, 11 female.

[850] 7 males, 6 females with tumors related to treatment. Injection site sarcomata also occurred. 1 hepatic sarcoma probably due to cysticercus.

[851] Dose not specified.

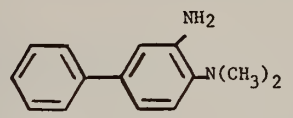
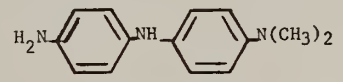
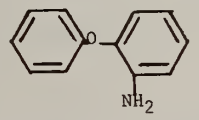
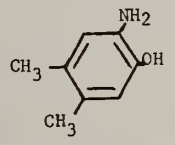
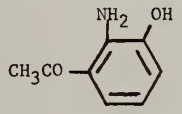
[852] 1 with urinary bladder squamous cell carcinoma at 25 months. 1 with differentiated squamous carcinoma of urinary bladder at 29 months.

[853] 2 urinary bladder squamous cell carcinoma.

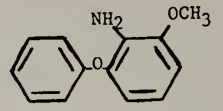
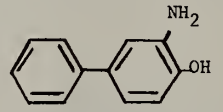
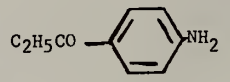
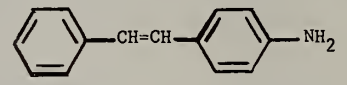
[854] Preliminary report given in 1956.

[855] Squamous cell urinary bladder: differentiated carcinoma at 29 months; 1 transitional-cell carcinoma at $34\frac{1}{2}$ months; 1 squamous cell carcinoma at $21\frac{3}{4}$ months; 1 carcinoma $33\frac{1}{2}$ months.

[856] Urinary bladder squamous cell carcinomas at 21, 29, 33 and 34 months.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
269. 3-AMINO-4-DIMETHYLAMINOBIPHENYL 								
Miller et al., 1956	7 rats	Albino	M	1.62 mM/kg. diet	P.O	0	7 at 8 mos	10 mos.
Miller et al., 1956	5 rats	Albino	F	1.62 mM/kg. diet	P.O	0	5 at 8 mos	10 mos.
270. 4-AMINO-4'-DIMETHYLAMINODIPHENYLAMINE 								
Miller, J. A., et al., 1957	15 adult rats	Albino, Holtzman.	M	Dissolved in corn oil, 2.67 mM/kg. of diet for 8 mos.	P.O	0[857]	14 alive after 8 mos.	10 mos.
271. 2-AMINODIPHENYLOXIDE 								
Hackmann, Ch., 1956	10 rats	Wistar		0.01% in food	P.O	Tumors[858]	6 at 15 mos., 3 at 20 mos.	Life.
272. 2-AMINO-4:5-DIMETHYPHENOL 								
Allen, M. J., et al., 1957	25 mice			1 part/4 parts cholesterol in 9–11 mg. pellet implant.	Urinary bladder.	Tumors[859, 860].	18 at 40 wks	At least 40 wks.
273. 2-AMINO-3-HYDROXYACETOPHENONE 								
Allen, M. J., et al., 1957	25 mice			1 part/4 parts cholesterol in 9–11 mg. pellet implant.	Urinary bladder.	Tumors[860, 861].	17 at 40 wks	At least 40 wks.

[857] Hyperirritability after 4 months.
[858] 1 otic squamous cell carcinoma; 1 hepatoma; 1 mediastinal lymphosarcoma; 1 sarcoma; 1 gastric papilloma; 1 urinary bladder papilloma.
[859] 5 with urinary bladder carcinoma.
[860] 1/24 of cholesterol controls with urinary bladder carcinoma.
[861] 1 with papilloma or adenoma and 4 with urinary bladder carcinomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
274. 2-AMINO-3-METHOXYDIPHENYL OXIDE 								
Hackmann, Ch., 1956	10 rats	Wistar		0.1% in food	P.O	Tumors[862]	5 at 15 mos., 1 at 19 mos.	Life.
275. 3-AMINO-4-HYDROXYDIPHENYL HYDROCHLORIDE  HCL								
Clayson, D. B., et al., 1958	36 mice	Albino		12.5% in compressed cholesterol pellet.	Implanted into the lumen of bladder.	Tumors[863, 864]	1 killed after 35 wks.	40 wks.
276. O-AMINOPHENOL								
Clayson, D. B., et al., 1958	37 mice	Albino		12.5% in compressed cholesterol pellet.	Implanted into the lumen of bladder.	0[864, 865]	1 killed at 31 wks	40 wks.
277. 4′-AMINOPROPIOPHENONE 								
Schmahl, D., 1957	17 rats	Wistar II	M & F	4 mg. daily (total 2.2 g. per animal) for 18 mos., with food.	Per os	Tumors [866]	840 d., 8 were alive at 830 d.	At least 18 mos.
278. 4-AMINOSTILBENE 								
Schmahl, D., and Mecke, R., Jr., 1956.	30 rats	Wistar II		0.5 mg. daily in food (5 mg./100 g)	P.O	Tumors[867]	17 at 266 d., time first tumor.	

[862] 1 urinary bladder papilloma; 6 urinary bladder carcinomas; 1 renouretal carcinoma; 1 mammary liposarcoma; 2 squamous otic cell carcinomas; 1 gastric papilloma; 1 enteric adenocarcinoma.

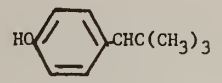
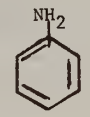
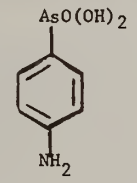
[863] 10 carcinomas (5 invasive and 5 noninvasive); 4 benign urinary bladder tumors.

[864] 5/55 cholesterol controls with 5 carcinomas (noninvasive).

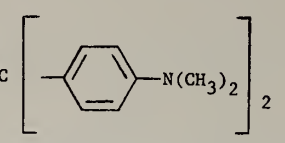
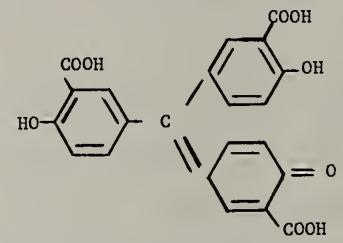
[866] 2 carcinomas (invasive).

[866] 1 andreno-renal carcinoma; 1 mediastinal carcinoma with renal metastases; 1 enteric carcinoma; 1 chondrosarcoma.

[867] 6 otic carcinomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
279. 4-TERT-AMYLPHENOL 								
Boutwell, R. K., and Bosch, D. K., 1959.	30 mice	Sutter	F	17.2% in benzene given twice wkly. for 20 wks.	Skin	0	22 at 20 wks	20 wks.
280. ANILINE 								
Oberst, F. W., et al., 1956	10 guinea pigs.			5 ppm. of vapor 6 hrs./d., 5 d./wk. for 20 wks.	Inhalation	0[868]		20 wks.
Oberst, F. W., et al., 1956	20 rats	Albino-Wistar	M	5 ppm. of vapor 6 hrs./d., 5 d./wk. for 26 wks.	Inhalation	0[868]		26 wks.
Oberst, F. W., et al., 1956	2 dogs[869]	Beagle	M	5 ppm. of vapor 6 hrs./d., 5 d./wk. for 26 wks.	Inhalation	0[868]		26 wks.
Oberst, F. W., et al., 1956	20 mice	Albino	F	5 ppm. of vapor 6 hrs./d., 5 d./wk. for 20 wks.	Inhalation	0[868]		20 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	31 mice	Sutter	F	20% soln. in dioxane given twice wkly. for 12 wks.	Skin	0	30 at 12 wks	12 wks.
281. ARSANILIC ACID 								
Bridges, J. H., et al., 1954	7 pigs	Duroc	M	1 oz./ton for 119 d. in milosoybean oil meal ration.	P.O	0[870]	2 sacrificed at 119 d.	119 d.
Bridges, J. H., et al., 1954	7 pigs[871]	Duroc	M	1 oz./ton for 84 d. in milosoybean oil meal ration.	P.O	0[870]	2 sacrificed at 84 d.	84 d.
Hanson, L. E., et al., 1955	40 pigs	Duroc, Chester White, Poland China.		60 or 240 g./ton in diet containing varied levels of protein.	P.O	0[14]		

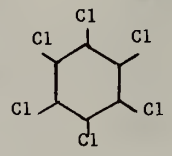
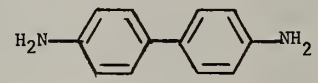
[14] No pathology given.
[868] No specific toxicity.
[869] Treadmill (5 MPH for 5 minutes) daily before exposure.
[870] Liver, kidney and spleen negative.
[871] Antibiotic fed prior to experiment.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
282. AURAMINE 								
Bonser, et al., 1956	15 mice	Stock Albino	F	0.1% in diet for 52 wks. (Total dose per mouse, 728 mg.)	P.O	Tumors[872]	11 alive at 20 wks.	70–89 wks.
Bonser, et al., 1956	15 mice	Stock Albino	M	0.1% in diet for 52 wks. (Total dose per mouse, 728 mg.)	P.O	Tumors[873]	8 alive at 20 wks	70–89 wks.
283. AURINTRICARBOXYLIC ACID 								
Lisco, H., and White, M. R., 1955.	Mice	CF_1	M	4 mg. of freshly prepared aqueous unsterilized soln.	I.V	0	Killed at intervals	Up to 320 d.
284. BENZENE								
Kotin, P., et al., 1954	69 mice	C57BL		0.5 min. drops of soln. 3 times/wk	Skin, interscapular region.	0	37 at 15 mo	At least 15 mos.
Kotin, P., et al., 1954	69 mice	C57BL		0.5 min. drops of soln. 3 times/wk	Skin, interscapular region.	0	42 at 390 d	At least 390 d.
Montagna, W., et al., 1954	24 mice[877]	HR/CH		Unspecified amt. once, painted on skin of dorsum.	Skin	0		
Piccagli, R. W., et al., 1954	10 mice[878]	Swiss	F	3 times wkly. for 14 wks	Skin, back	0		52 wks.
Piccagli, R. W., et al., 1954	5 mice	Swiss	F	3 times daily for 14 wks	Skin, back	0		52 wks.
Piccagli, R. W., et al., 1954	5 mice	Swiss	F	Daily for 14 wks	Skin, back	0		52 wks.

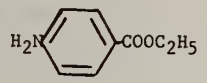
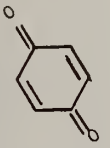
[872] 8 lymphomas; 1 subcutaneous sarcoma; 3 hepatomas.
[873] 3 lymphomas; 3 hepatomas; 1 enteric carcinoma.
[877] Hairless.
[878] Age: 2 months.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
284. BENZENE (Continued)								
Yoshimoto, I., 1954	2 rabbits	Domestic		10,000 ppm., 2 hrs./d., 6 d./wk	Inhalation	0	Killed at 3 mos	3 mos.
Yoshimoto, I., 1954	3 rabbits	Domestic		500 ppm	Inhalation	0	Killed	10–11 mos.
Yoshimoto, I., 1954	4 rabbits	Domestic		1,000 ppm	Inhalation	0	Killed	10–11 mos.
Yoshimoto, I., 1954	2 rabbits	Domestic		5,000 ppm	Inhalation	0	Killed	At least 4 mos.
Ehrhart, H., and Stitch, W., 1955.	76 mice	Albino RFH		20 times 0.0025 ml. as 2% in Tylose, total dose 0.05 ml. in 3 mos.	S.C	0	38 at 4 mos., 13 at 9 mos.	9 mos.
Biesele, J. J., et al., 1956	Mice	Swiss, albino	F	1 brush stroke thrice wkly., Mon. Wed., Fri.[879]	Skin, back			36 d.
Knake, E., 1956	21 mice	SW		Twice wkly	Skin	Tumors[880]	12 at 11 mos., 2 at 22 mos.	26 mos.
Wolf, M. A., et al., 1956	Rats	White	M & F	1 mg. 10, 50 or 100/kg./d. in 2–3 ml. olive oil soln. emulsified with 5–10% aqueous soln. of acacia for 132 feedings.	P.O., stomach tube.	0		187 d.
Wolf, M. A., et al., 1956	Rats	White	M	Avg. conc. of 7 mg./L. vapor for (133) 7 hr. exposures.	Inhalation	0[881]		212 d.
Wolf, M. A., et al., 1956	Rats	White	M	Avg. conc. of 21 mg./L. vapor for (70) 7 hr. exposures.	Inhalation	0[882]	High mortality	93 d.
Wolf, M. A., et al., 1956	Rats	White	M	Avg. conc. of 14 mg./L. vapor for (28) 7 hr. exposures.	Inhalation	0[881]	Slight mortality	38 d.
Wolf, M. A., et al., 1956	Rats	White	M & F	Avg. conc. of 0.28 mg./L. vapor for (136) 7 hr. exposures.	Inhalation	0[883]		204 d.
Wolf, M. A., et al., 1956	Guinea pigs	Albino	M	Avg. conc. of 0.28 mg./L. vapor for (193) 7 hr. exposures.	Inhalation	0[884]		269 d.
Wolf, M. A., et al., 1956	Rabbits	Albino	M	Avg. conc. of 0.26 mg./L. vapor for (175) 7 hr. exposures.	Inhalation	0[885]		243 d.
Wolf, M. A., et al., 1956	Guinea pigs	Albino	M	Avg. conc. of 0.28 mg./L. vapor for (23) 7 hr. exposures.	Inhalation	0[883]		32 d.
Boutwell, R. K., et al., 1957	36 mice	Sutter	F	25 μl twice a wk. for 24 wks	Skin	Tumors[886]	32 at 24 wks	24 wks.
Fiala, S., 1958	66 mice+12 control.	RFH		2% soln. in tylose,[887] 0.05 ml. total dose.	S.C. 20 inj	0		9 mos.
Fiala, S., 1958	26 mice+11 control.	RFH		2% soln. in tylose[887], 0.05 ml., total dose.[888]	S.C., 20 inj	0		9 mos.

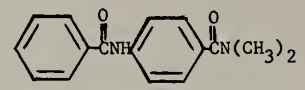
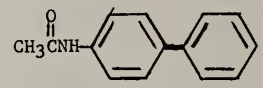
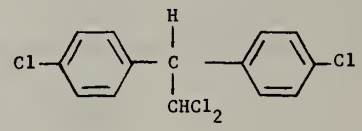
[879] Study of tissue culture skin growth.
[880] 1 thymic sarcoma; 1 melanosarcoma; 2 pulmonary adenomas.
[881] Histopathology of blood, spleen and bone marrow.
[882] Histopathology of liver, spleen and blood.
[883] Histopathology of blood.
[884] Histopathology of blood and bone marrow.
[885] Histopathology of kidneys, testes and blood.
[886] Papillomas.
[887] Methylcellulose.
[888] Plus inhalation, $15 \times 20_2$.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
284. BENZENE (Continued)								
Nau, C. A., et al., 1958	10 mice	C3H		(Total dose of 8.9 gm.) once a wk. for 4 mos., thrice wkly. thereafter for 108 applications in 12 mos.	Skin, back	0	6 died	12 mos.
Nau, C. A., et al., 1958	65 mice	40 CFW & 25 C3H.		(Total dose of 11.9 gm.) once a wk. for 2 mos., thrice wkly. thereafter for 125 applications in 12 mos.	Skin, back	0	55 killed, 8 died	12 mos.
Rosati, P., and Lanza, G. G., 1958.	4 guinea pigs			0.5 ml. of a soln. in 1% in oil, every 2nd d. for 21 injs.	I.M	0		1½ mos.
Baldwin, R. W., et al., 1959	40 mice	Schofield	20 ♂♂	Painted twice wkly. for 40 wks	Skin	1 pap		40 wks.
Batra, B. Kumari, 1959	69 mice[55]	C3H (Bar)	F	Single brush stroke of unspecified amt. once.	Ovaries	Tumors[889, 890].		Studied thru 4th generation.
Batra, B. Kumari, 1959	51 mice[55]	C57BL	F	Single brush stroke of unspecified amt. once.	Ovaries	0[891, 892]		Studied thru 4th generation.
Batra, B. Kumari, 1959	113 mice[55]	Strong A	F	Single brush stroke of unspecified amt. once.	Ovaries	Tumors[893, 894].		Studied thru 4th generation.
285. BENZENE HEXACHLORIDE, α ISOMER 								
Ortega, P., et al., 1957	12 rats	Sherman white	6 ♂♂	100 ppm. in diet up to 8 mos.[895]	P.O	0[896]	Killed at intervals	8 mos.
Ortega, P., et al., 1957	12 rats	Sherman white	6 ♂♂	50 ppm. in diet up to 8 mos.[895]	P.O	0[896]	Killed at intervals	8 mos.
286. BENZIDINE 								
Boyland, E., et al., 1954	10 rats	Wistar	F	0.017% in the diet throughout experiment[897].	P.O	Tumors [898]	6 died by 127 d., all dead at 224 d.	224 d.
Boyland, E., et al., 1954	10 rats	Wistar	F	0.017% in the diet throughout experiment.[899]	P.O	Tumors [900]	7 died by 254 d	424 d.

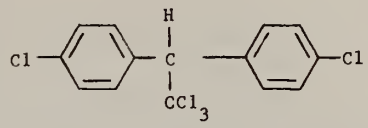
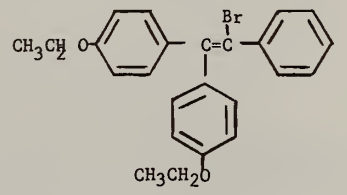
[55] Age at start: 3 mos.
[888] Plus inhalation, $15 \times 20_2$.
[889] 41 with tumors.
[890] 10/28 untreated controls with tumors (included pulmonary tumors).
[891] 2 with tumors in 2nd and 3rd generations.
[892] 25 untreated controls negative.
[893] 53 with pulmonary tumors.
[894] 5/60 untreated controls with tumors (including pulmonary tumors).
[895] Lindane, 99.7% gamma isomer.
[896] Cytological changes of hepatic cells.
[897] With casein.
[898] 1 hepatoma and 1 cholangiocarcinoma.
[899] Casein hydrolysate-tryptophan diet.
[900] 1 hepatic carcinoma, 1 cholangiocarcinoma and 1 cholangioma.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
286. BENZIDINE (Continued)								
Bonser, et al., 1956	30 mice	Stock Albino	F	0.1 cc of 3% susp. in arachis oil, twice wkly. for 52 wks. (Total dose per mouse, 312 mg.).	S.C	5[901]	7 alive at 20 wks	Approx. 69 wks.
Bonser, et al., 1956	30 mice	Stock Albino	M	0.1 cc. of 3% susp. in arachis oil twice wkly. for 52 wks. (Total dose per mouse, 312 mg.).	S.C	5[902]	6 alive at 20 wks	70 to 89 wks.
Oida, S., 1958	2 dogs			0.50–0.1 g. once a wk. for 20–128 d	P.O. or S.C	0		Up to 128 d.
Oida, S., 1958	9 rabbits			0.50–0.1 g. once a wk. for 20–128 d	P.O. or S.C	0		Up to 128 d.
287. BENZOCAINE 								
Roe and Salaman, 1955	20 mice	Albino "S" strain.	M	0.3 ml. of 27% soln. in acetone wkly. for 15 wks. (Total dose: 1.2 g.[903]).	Skin	0	19 at 18 wks	At least 19 wks.
288. BENZOQUINONE 								
Kishizawa, F., 1954	25 mice[904]			Exposed to 5 mg. heated vapors in a closed chamber measuring 130 liters for 1 hr./d., six times a wk.	Inhalation	Tumors [906]	11 survived more than 100 d.	
Kishizawa, F., 1956	25 mice	Hybrid		5 mg. for 1 hr. 6 times a wk	Inhalation	Tumors [906]		More than 385 d.
Umeda, Masao, 1957	24 rats	Wistar, 15 Hybrid, 9.	M & F	Dissolved in propylene glycol at conc. of 1 g./10 cc. given in 0.5 cc. amts. once every wk. conc. reduced to 0.2 g./10 cc. after 53 d., increased to 0.4 g./10 cc. after 173 d., [796,907], continued for 394 d.	S.C. inj. in back at same site.	Tumors [908]	17 survived 394 d. or more.	585 d.

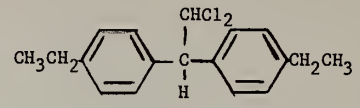
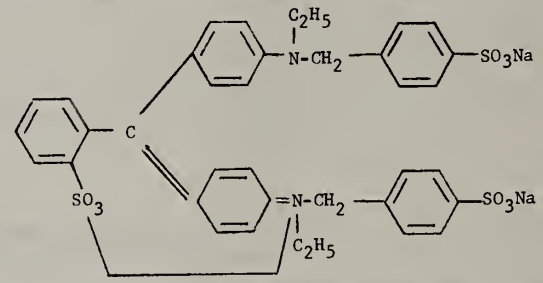
[796] Product of highest purity.
[901] 3 with hepatomas, 2 with lymphoma.
[902] 4 with hepatomas, 1 with lymphoma.
[903] 18 weekly applications 0.3 ml. of croton oil in acetone (first alternated at 3-day intervals with test substance).
[904] 11 grams weight.
[905] 2 pulmonary adenocarcinomas in survivors (over 100 days).
[906] 2 pulmonary adenocarcinomas.
[907] Solution prepared and sterilized before each injection.
[908] 2 injection site spindle cell fibrosarcomas (1 male at 423rd day, 1 female at 481st day); 1 with lymph node metastasis. 1 hepatic cysticercus sarcoma (died on 566th day). Propylene glycol suspect promoter.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
289. 4-BENZOYLAMINO-N:N-DIMETHYL-AMINO BENZAMIDE 								
Walpole, A. L., et al., 1954	12 rats	Albino	6 ♂♂	Total of 400 mg./100 g. in total of 3.2 ml./100 g. arachis oil[336] twice wkly. for 63 dosing d.	S.C. r. flank	Tumors[338, 909].		508 d.
290. N-4-BIPHENYLACETAMIDE 								
Morris et al., 1957	18 rats	Buffalo	F	Carcinogen dissolved in propylene glycol and then incorporated into diet at a level of 0.025% of complete diet for 13 mos.[910]	P.O.	13 (18 tumors)[911].	12 at 60 wks.[912]	70 wks.
Morris et al., 1957	18 rats	Buffalo	F	Carcinogen dissolved in propylene glycol and then incorporated into diet at a level of 0.025% of complete diet for 15 mos.[913]	P.O.	4[914]	11 at 48 wks.[915]	At least 57 wks.
291. 2,2-BIS-(P-CHLOROPHENYL)-1; 1-DICHLORETHANE 								
D'Arcy, P. F., 1954	Mice	White	M	20 mg./100 g. body wt. as 2% soln. in arachis oil thrice wkly. up to 6 wks.[916]	S.C.	0[917]		6 wks.
D'Arcy, P. F., 1954	Mice	White	M	0.1% in diet up to 6 wks.	P.O.	0[917]		6 wks.

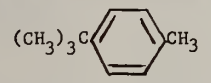
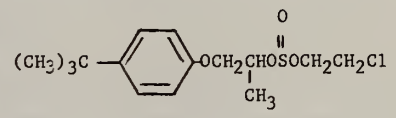
[336] Sterilized (140° C. for 1 hour).
[909] 1 male with injection site sarcoma.
[910] 18 survived for 47 weeks treatment (759 mg. total intake); 12 survived for 60 weeks treatment (989 mg. total intake); 3 survived for 70 weeks treatment (1143 mg. total intake).
[911] 16 mammary tumors (15 adenocarcinomas; 1 squamous carcinoma); 2 uterine sarcomas (autopsied at 18 and 20 mos.).
[912] Autopsy age—16.8 mos. avg.
[913] 11 survived for 47 weeks treatment (891 mg. total intake); 10 survived for 57 weeks treatment (1073 mg. total intake).
[914] 1 mammary fibrosarcoma (autopsy at 18 mos.); 3 uterine carcinomas.
[915] Autopsy age—20 mos. avg.
[916] DDD.
[917] Adrenal cortex study.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
292. 2,2-BIS(p-CHLOROPHENYL)-1,1,1-TRICHLOROETHANE 								
Klimmer, O. R., 1955	48 rats	White	M & F	32 mg.[918] pK. aq. emulsion (gastric tube) daily.	P.O	0	83% at 26 wks	6 mos.
Klimmer, O. R., 1955	48 rats	White	M & F	32 mg. pK. in oil (gastric tube) daily.	P.O	0	82% at 26 wks	6 mos.
Klimmer, O. R., 1955	48 rats	White	M	10 mg. pK. in peanut oil (gastric tube) daily.	P.O	0		17 mos.
Treon, J. F., and Cleveland, F. P., 1955.	4 dogs	Beagles	2 M & 2 F	10 ppm.[919] in diet 6 d./wk. for 15.6 mos.	P.O	0	100%	15.6 mos.
Treon, J. F., and Cleveland, F. P., 1955.	4 dogs	Beagles	2 M & 2 F	30 ppm.[919] in diet 6 d./wk. for 15.7 mos.	P.O	0	100%	15.7 mos.
Treon, J. F., and Cleveland, F. P., 1955.	120 rats	Carworth	60 F & 60 M	2.5, 12.5, or 25.0 ppm.[919] as alcoholic soln. in diet for 2 yrs.	P.O	0	Few deaths	2 yrs.
Treon, J. F., and Cleveland, F. P., 1955.	Rats			2.5, 5.0, or 75.0 ppm.[919] in diet for 6 mos.	P.O	0		6 mos.
Treon, J. F., and Cleveland, F. P., 1955.	Rabbits			>100 mg. d. in ultrasene 2 hrs./d., 5 d./wk., for 10 wks.[919]	Skin	0		10 wks.
Treon, J. F., and Cleveland, F. P., 1955.	Rabbits			300–600 mg./d. in vegetable oil 2 hrs./d., 5 d./wk. for 10 wks.[919]	Skin	0		10 wks.
Treon, J. F., and Cleveland, F. P., 1955.	Rabbits			600–900 mg./d. as dry powder 2 hrs./d., 5 d./wk. for 10 wks.	Skin	0		10 wks.
293. α.α-BIS(P-ETHOXYPHENYL);β,-PHENYL-β-BROMOETHYLENE 								
Yujii, Y., et al., 1956	Mice	NA_2		Once every 2–3 wks	S.C., back	Tumors[920]		At least 7 mos.

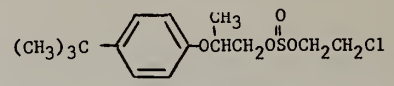
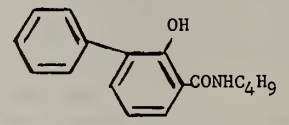
[918] DDT.
[919] Recrystallized.
[920] 1 lymphoma.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
294. 2,2-BIS-(P-ETHYL-PHENYL)-1,1-DICHLOROETHANE 								
Finnegan, J. K., et al., 1955	10 weanling rats.	Albino	M & F	5000 ppm. in food[921]	Oral	0		2 yrs.
Finnegan, J. K., et al., 1955	10 weanling rats.	Albino	M & F	2500 ppm. in food.[921]	Oral	0		2 yrs.
Finnegan, J. K., et al., 1955	3 dogs			100 ppm. in food.[921]	Oral	0		1 yr.
Finnegan, J. K., et al., 1955	15 weanling rats.	Albino	M & F	100 ppm. in food.[921]	Oral	0		2 yrs.
Finnegan, J. K., et al., 1955	4 young rabbits.	Albino		30% in dimethyl phthalate daily—5 d./wk.[921]	1 ml./kg. skin application.	0		13 wks.
Finnegan, J. K., et al., 1955	4 young rabbits.	Albino		30% in dimethyl phthalate daily—5 d./wk.[921]	3 ml./kg. skin application.	0		13 wks.
Finnegan, J. K., et al., 1955	3 dogs	Albino	M & F	5000 ppm. in food[921]	Oral	0	2 at 19 wks	22 wks.
Finnegan, J. K., et al., 1955	3 dogs			1000 ppm. in food[921]	Oral	0		1 yr.
Finnegan, J. K., et al., 1955	15 weanling rats.	Albino	M & F	500 ppm. in food[921]	Oral	0		2 yrs.
Finnegan, J. K., et al., 1955	10 weanling rats.	Albino	M & F	1000 ppm. in food[921]	Oral	0		2 yrs.
295. BRILLIANT BLUE 								
Gross, unpublished data[922]	25 rats			1 ccm.[923] twice wkly. for 434 d., total dose 0.87 g./animal.	S.C.	Tumors[924]	5 died	493 d.
Gross, unpublished data[922]	40 rats			1 ccm.[923] twice wkly. for 373 d., total dose 2.07 g./animal.	S.C.	Tumors[925]	15 died	438 d.

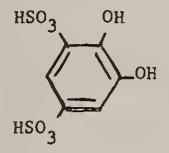
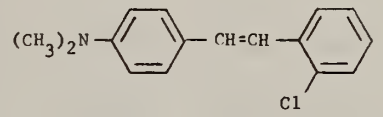
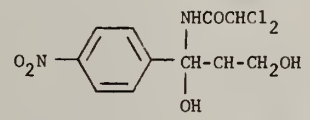
[921] Perthane.
[922] Recorded in Toxikologische Daten, etc. (1955).
[923] Brilliant blue FCF.
[924] 12 with fibrosarcoma.
[925] 24 with fibrosarcoma.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
295. BRILLIANT BLUE (Continued)								
Gross, unpublished data[922]	48 rats			1 ccm.[926] twice wkly. for 630 d., total dose 1.3 g./animal.	S.C	Tumors [927]	39 died	673 d.
Gross, unpublished data[922]	27 rats			1 ccm.[926] twice wkly. for 604 d., total dose 2.9 g./animal.	S.C	Tumors [928]	7 died	656 d.
Klinke, unpublished data[922]	85 rats			10–15 mg. daily as 0.1% in food for duration.[929]	P.O	0		
Nelson, Arthur A., and Hagan, E. Conway, 1953.	18 rats	Osborne-Mendel.	M & F	2 or 3%, 1 ccm. wkly. for 693 d	S.C	Tumors [930]		693 d.
296. P-TERTIARY-BUTYLTOLUENE 								
Hine, C. H., et al., 1954	80 rats	Long-Evans		25 or 50 ppm. for 1, 2, 4 or 7 hrs. daily, 5 d. per wk. up to 26 wks.	Inhalation	0		26 wks.
Ungar, H., et al., 1955	26 rats	Long-Evans	F	25 ppm. for 1, 2, 4 & 7 hrs. daily 5 d./wk. for 127 exposures.	Inhalation	0[931]		6 mos.
Ungar, H., et al., 1955	18 rats	Long-Evans	F	25 ppm. for 1, 2, 4 & 7 hrs. daily, 5d./wk. for 50 exposures.	Inhalation	0[931]		10 wks.
Ungar, H., et al., 1955	17 rats	Long-Evans	F	50 ppm. for 1, 2, 4 & 7 hrs. daily, 5 d./wk. for 25 exposures.	Inhalation	0[931]		5 wks.
Ungar, H., et al., 1955	18 rats	Long-Evans	F	50 ppm. for 1, 2, 4 & 7 hrs. daily, 5 d./wk. for 127 exposures.	Inhalation	0[931]		6 mos.
297. β-P-T-BUTYL PHENOXY-α-METHYL β-CHLORODIETHYL SULFITE 								
Sternberg, S. S., et al., 1959	Rats			500–1, 500 ppm. in adequate diet.[932]	P.O	Tumors [933]		
Sternberg, S. S., et al., 1959	24 dogs			500–1, 500 ppm.[932] in adequate diet for 46 mos.	P.O	Tumors [934]	17 died or were sacrificed between 462–1, 220 d.	46 mos.

[926] Patent blue AE.
[927] 9 with fibrosarcoma.
[928] 15 with fibrosarcoma.
[929] FD&C blue No. 1.
[930] Fibrosarcomas.
[931] Neuropathology only.
[932] Aramite.
[933] Neoplastic hepatic nodules.
[934] 13 with cholangeal adenocarcinomas and precancerous lesions in intra and extrahepatic bile ducts. Cholecystic adenomas, cholangeal carcinomas *in situ*. 100% with hepatic damages: 9 with hepatic nodular hyperplasia.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
298. 2-(P-T-BUTYL-PHENOXY)ISOPROPYL-2-CHLORETHYL SULFITE 								
Popper, H., et al., 1960	100 rats	Wistar (derived).	50 āā	200 ppm. in diet for 2 yrs.[935]	P.O	0[935]	All survivors sacrificed.	2 yrs.
Popper, H., et al., 1060	100 rats	Wistar (derived).	50 āā	400 ppm. in diet for 2 yrs.[935]	P.O	Tumors[937, 938].	All survivors sacrificed.	2 yrs.
Popper, H., et al., 1960	100 rats	Carworth Farms Nelson.	50 āā	200 ppm. in diet for 2 yrs.[935]	P.O	0[939]	All survivors sacrificed.	2 yrs.
Popper, H., et al., 1960	100 rats	Carworth Farms Nelson.	50 āā	100 ppm. in diet for 2 yrs.[935]	P.O	0[940]	All survivors sacrificed.	2 yrs.
Popper, H., et al., 1960	100 rats	Sprague-Dawley.	50 āā	100 ppm. in diet for 2 yrs.[935]	P.P	0[941]	All survivors sacrificed.	2 yrs.
Popper, H., et al., 1960	100 rats	Sprague-Dawley.	50 āā	100 ppm. in diet for 2 yrs.[935]	P.P	0[942]	All survivors sacrificed.	2 yrs.
Popper, H., et al., 1960	100 rats	Carworth Farms Nelson.	50 āā	400 ppm. in diet for 2 yrs.[935]	P.O	Tumors[943, 944].	All survivors sacrificed.	2 yrs
Popper, H., et al., 1960	100 rats	Wistar (derived).	50 āā	100 ppm. in diet for 2 yrs.[935]	P.O	0[945]	All survivors sacrificed.	2 yrs.
Popper, H., et al., 1960	100 rats	Sprague-Dawley.	50 āā	400 ppm. in diet for 2 yrs.[935]	P.O	0[945]	All survivors sacrificed.	2 yrs.
Sternberg, S. S., et al., 1960	19 dogs	Mongrel	10 M & 9 F	Total intake 500–1,429 ppm. in diet for 3½ yrs.[935]	P.O	Tumors[947, 948].	Died or killed between 462–1,220 d.	3½ yrs.
299. N-n-BUTYL-3-PHENYLSALICYLAMIDE 								
Seeberg, V. P., et al., 1956	20 rats	Sherman Wistar	10 āā	300 mg./kg. daily in diet for 90 d	P.O	0	4 sacrificed at 30 d.	90 d.
Seeberg, V. P., et al., 1956	20 rats	Sherman Wistar	10 āā	1 g./kg. daily in diet for 90 d	P.O	0	4 sacrificed at 30 d.	90 d.

[935] Aramite with 5–10% bis-2 (p-tertbutylphenoxyl) isopropyl sulfite.
[936] 1 hepatic nodular hyperplasia, 3 with hepatic lesions.
[937] 2 with hepatic carcinoma, 5 with cholangeal adenoma, 20 with hepatic nodular hyperplasia, 9 with cholangeal hyperplasia and 7 with hepatic lesions.
[938] 21/200 untreated controls with cholangeal hyperplasia, 13 with hepatic lesions, and 2 with hepatic nodular hyperplasia.
[939] 10 with hepatic nodular hyperplasia, 4 with cholangeal hyperplasia and 12 with hepatic lesions.
[940] 3 with hepatic nodular hyperplasia, 6 with cholangeal hyperplasia and 11 with hepatic lesions.
[941] 2 with cholangeal hyperplasia. 2 with hepatic lesions.
[942] 1 with hepatic nodular hyperplasia, 4 hepatic lesions.
[943] 2 with cholangeal adenomas, 22 with hepatic nodular hyperplasia, 8 with cholangeal hyperplasia and 8 with hepatic lesions.
[944] 5/200 untreated controls with hepatic nodular hyperplasia, 9 with cholangeal hyperplasia and 15 with hepatic lesions.
[945] 2 with hepatic nodular hyperplasia, 11 with cholangeal hyperplasia, 5 with hepatic lesions.
[946] 1 with hepatic nodular hyperplasia, 3 with hepatic lesions.
[947] 8 cholecystic adenocarcinomas, 12 extrahepatic cholangeal adenocarcinomas. 4 intrahepatic cholangeal carcinomas, 5 neoplastic hepatic nodules. 1 metastatic renal adenocarcinoma.
[948] 12 untreated controls normal.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
300. CATECHOL-3,5-DISULFONIC ACID 								
Haddow, A., and Horning, E. S., 1960.	20 mice	Stock		5 mg. wkly. for 41 wks	S.C	Tumors[949]	13 at 12 mos	12 mos. to date.
301. 2′-CHLORO-4-DIMETHYLAMINOSTILBENE 								
Reid, 1956	16 rats[110]	Albino	F	5 doses of 12 mg. each of substance in arachis oil.	I.P	13[950]	Killed about 1 mo. after appearance of 1st tumor.	563 d.
Reid, 1956	12 rats[110]	Albino	F	5 doses of 12 mg. each of substance in arachis oil.[951]		Tumors[952]	Each rat killed about 1 mo. after development of 1st tumor.	563 d.
Reid, 1956	9 rats[110]	Albino	F	5 doses of 12 mg. each of substance in arachis oil.[953]	I.P	9[954]	Each rat killed about 1 mo. after development of his 1st tumor.	563 d.
302. CHLOROMYCETIN 								
Nelson, A. A., and Radomski, J. L., 1954.	4 dogs[955]	Mongrel		250 mg./kg.[956,957] capsule/d., 6 d./wk., reduced to 100 mg./kg., 1 day after deaths, total of 97 d.	P.O	0	2 died	97 d.

[110] Initial treatment: 6 weeks of age.

[949] 1 thymoma, 1 lymphoma.

[950] 2 with mammary tumors before 290 days; 4 with 11 tumors (9 mammary; 1 facial squamous cell carcinoma; 1 hepatoma at 291–430 days); 7 with 17 mammary tumors at 431–563 days.

[951] 27 tri-weekly doses bovine pituitary growth hormone in saline S.C. Initially 1.2 mg. per week doubled in 2 weeks, doubled again in 2 weeks.

[952] 6 with 13 tumors (11 mammary, 1 pulmonary carcinoma and 1 pituitary chromophobe adenoma) at 291–430 days; 4 with 14 tumors (12 mammary, 2 facial squamous cell carcinomas) at 431–463 days.

[953] Tri-weekly doses bovine pituitary growth hormone in saline S.C. for total experiment. Initially 1.2 mg. per week, doubled in 2 weeks, doubled again in 2, 20, and 14 weeks.

[954] 1 with 1 mammary tumor at 151–290 days. 3 with 8 tumors (7 mammary, 1 facial squamous cell carcinoma) at 291–430 days. 5 with 11 tumors (9 mammary, 2 granulomas) (1 orbital) at 431–563 days.

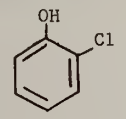
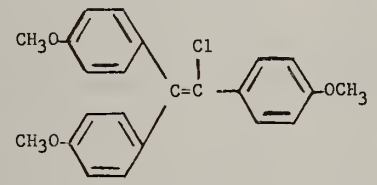
[955] Age: 2–5 years.

[956] Chloramphenicol.

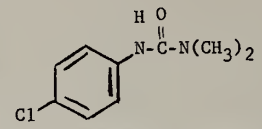
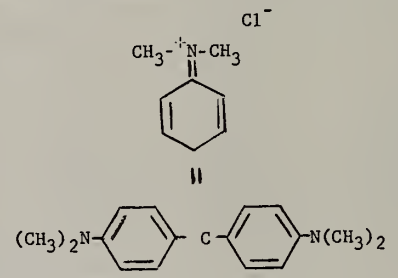
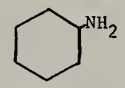
[957] Inactive L-threo isomer.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
302. CHLOROMYCETIN (Continued)								
Nelson, A. A., and Radomski, J. L., 1954.	4 dogs[955]	Mongrel		100 mg./kg. capsule/d., 6 d./wk. for 108 d.[968]	P.O	0	100%	108 d.
Nelson, A. A., and Radomski, J. L., 1954.	5 dogs[955]	Mongrel		250 mg./kg. capsule/d., 6 d./wk. for 98 d.[959]	P.O	0	3 died	98 d.
Nelson, A. A., and Radomski, J. L., 1954.	2 dogs[956]	Mongrel		250 mg./kg. capsule/d., 6 d./wk. for 2 wks. then off drug 3 wks., cycle repeated for total of 152 d.[959]	P.O	0	100%	152 d.
Nelson, A. A., and Radomski, J. L., 1954.	4 dogs[955]	Mongrel		175 mg./kg. capsule/d., 6 d./wk. for 115 d.[968]	P.O	0	1 died	115 d.
Nelson, A. A., and Radomski, J. L., 1954.	2 dogs[955]	Mongrel		250 mg./kg. capsule/d., 6 d./wk. for 2 wks. then off drug 3 wks., cycle repeated for total of 152 d.[968]	P.O	0	100%	152 d.
Nelson, A. A., and Radomski, J. L., 1954.	5 dogs[965]	Mongrel		250 mg./kg. capsule/d., 6 d./wk. for 98 d.[968]	P.O	0	3 died	98 d.
Rigdon, R. H., et al., 1954	Ducks	White Pekin		In 250 mg. capsules—up to 54.0 g	P.O	0		38 d.
Saslaw, S., et al., 1954	3 monkeys	Macaca Mulatta.		750 mg. daily in the diet in capsules.[960]	P.O	0[961]		At least 3 mos.
Saslaw, S., et al., 1954	6 monkeys	Macaca Mulatta.		750 mg. daily in capsules, 6 d./wk	P.O	0[961]		15 mos.
Saslaw, S., et al., 1954	2 monkeys	Macaca Mulatta.		750 mg. daily in capsules, 6 d./wk. on alternate wks.	P.O	0[961]	One died at 14 mos.	15 mos.
Saslaw, S., et al., 1954	Monkeys	Macaca Mulatta.		5 g. daily	P.O	0[961]	1 died at 3 mos	Over 3 mos.
Thompson, R. Q., et al., 1954.	30 rats	Albino	M	0.25, 0.5, or 1.0% in high-iodide content diet for 91 d.	P.O	0	100%	91 d.
Thompson, R. Q., et al., 1954.	30 rats	Albino	M	0.25, 0.5 or 1.0% in high-iodide content diet supplemented with 0.025% desiccated thyroid for 91 d.	P.O	0	1 died	91 d.
Thompson, R. Q., et al., 1954.	30 rats	Albino	M	0.25, 0.5 or 1.0% in high-iodide content diet supplemented with 0.0125% desiccated thyroid for 91 d.	P.O	0	1 died	91 d.
Radomski, J. L., et al., 1955	4 dogs			250 mg./kg. capsule daily for (4) 2 wk. periods separated by 3 wk. period of no drug administration.	P.O	0		17 wks.
Reutner, T. F., et al., 1955	2 dogs			250 mg./kg.[962] capsule daily, 6 d./wk.	P.O	0[963]	Killed at 8 & 15 wks.	15 wks.
Reutner, T. F., et al., 1955	5 dogs			250 mg./kg.[962] capsule daily, 6 d./wk.	P.O	0[963]	All sacrificed or died.	5 wks.

[965] Age: 2–5 years.
[968] Synthetic.
[969] Fermentation.
[960] Preceded by Vitamin B free diet for 2 months.
[961] Hematology only.
[962] Synthetic or fermentation product used.
[963] No pathology.

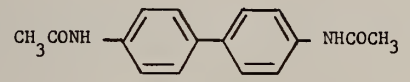
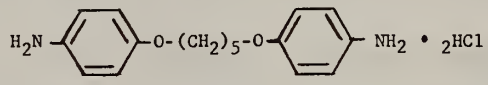
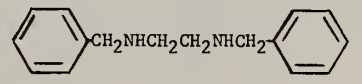
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
302. CHLOROMYCETIN (Continued)								
Reutner, T. F., et al., 1955	2 dogs			250 mg./kg.[962] capsule daily, 6 d./wk.	P.O	0[963]	All sacrificed	16 wks.
Reutner, T. F., et al., 1955	7 dogs			250 mg./kg.[962] capsule daily, 6 d./wk.	P.O	0[963]	All sacrificed	Up to 25 wks.
Reutner, T. F., et al., 1955	12 dogs			250 mg./kg.[962] capsule daily, 6 d./wk. for four (4) 2 wk. period, interrupted by 3 wk. periods of drug withdrawal.	P.O	0		About 20 wks.
Reutner, T. F., et al., 1955	1 dog[47]		F	100 mg./kg.[962] daily divided doses 5 or 6 d./wk. for over 2 yrs.	P.O	0[963]		Over 2 yrs.
Reutner, T. F., et al., 1955	2 dogs[47]		F	200 mg./kg.[962] daily, 5 or 6 d./wk. for over 2 yrs.	P.O	0[963]		Over 2 yrs.
Reutner, T. F., et al., 1955	3 dogs			100 mg./kg. daily, 6 d./wk	P.O	0[5414]	2 died at 10 & 23 d. respect.	1 yr.
303. 2-CHLOROPHENOL 								
Boutwell, R. K., and Bosch, D. K., 1959.	30 mice	Sutter	F	20% soln. in dioxane given twice wkly. for 12 wks.	Skin	Tumors [964]	28 at 12 wks	12 wks.
304. CHLOROTRIANISENE 								
Segal, S. J., and Thompson, C. R., 1956.	16 rats	Sprague-Dawley.	M	210 μg./0.1 cc. olive oil for 30 d	P.O	0	All sacrificed	30 d.
Segal, S. J., and Thompson, C. R., 1956.	16 rats	Sprague-Dawley.	M	420 μg./0.2 cc. olive oil for 30 d	P.O	0	All sacrificed	30 d.

[47] Young.
[962] Synthetic or fermentation product used.
[963] No pathology.
[964] 46% with papillomas; avg. 0.64/mouse.
[5414] No pathology.

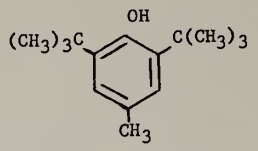
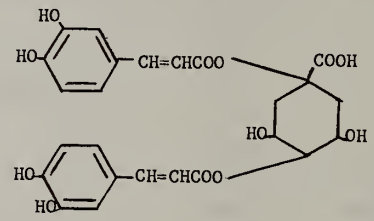
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
305. 3-(p-CHLOROPHENYL)-1,1-DIMETHYLUREA 								
Hodge, H. C., et al., 1958	2 dogs	Beagle	1 āā	12.5 mg./kg. body wt. in food for 1 yr.	P.O	0	Killed at end of experiment.	1 yr.
Hodge, H. C., et al., 1958	2 dogs	Beagle	1 āā	25 mg./kg. body wt. in food for 1 yr.	P.O	0	Killed at end of experiment.	1 yr.
Hodge, H. C., et al., 1958	60 rats	Rochester	30 āā	0.0025% in basal & meat diet for 2 yrs.	P.O	0	70–90% died by end of 2nd yr.	2 yrs.
Hodge, H. C., et al., 1958	60 rats	Rochester	30 āā	0.025% in basal & meat diet for 2 yrs.	P.O	0	70–90% died by end of 2 yrs.	2 yrs.
Hodge, H. C., et al., 1958	60 rats	Rochester		0.25% in basal & meat diet for 2 yrs.	P.O	0	70–90% died by end of 2nd yr.	2 yrs.
Hodge, H. C., et al., 1958	2 dogs	Beagle	1 āā	2.5 mg./kg. body wt. in food for 1 yr.	P.O	0	Killed at end of experiment.	1 yr.
306. CRYSTAL VIOLET 								
Brock[965]	50 rats			5 mg. in water soln. daily for 720 d., total dose 0.8 gm./animal.	P.O	0		720 d.
Klinke, unpublished data[922]	10 rats			30–40 mg. daily as 0.2% in food for 175 d.	P.O	0		175 d.
307. CYCLOHEXYLAMINE 								
Pliss, G. B., 1958	50 rats		22 M & 28 F	0.5 ml. of 5.0% in sunflower oil & water soln. in food 6 d./wk. for 12 mos., total 8925 mg.	P.O	0	36 over 6 mos., 28 over 12 mos.	Over 18 mos.

[965] Recorded in Toxikologische Daten von Farbstoffen und ihre Zulassung für Lebensmittel in verschiedenen Ländern 6: 77, 1957.

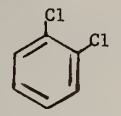
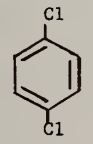
[922] Recorded in Toxikologische Daten, etc. (1955).

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
308. N,N'-DIACETYL BENZIDINE 								
Dunn, T. B., et al., 1956	Mice	C3Hb/Hen & A		0.25% in propylene glycol in the diet.	P.O	0		
Dunn, T. B., et al., 1956	Rats	Buffalo		0.25% dissolved in propylene glycol in the diet.	P.O	0[966]		At least 4 mos.
Morris et al., 1957	18 rats	Buffalo	F	Carcinogen dissolved in propylene glycol & then incorporated into diet at level of 0.25% of complete diet for 2 mos.	P.O	1 (tumor of the ear).	Avg. survival time: 6.0 mos.	14 mos.
309. 1,5-DI(P-AMINOPHENOXY) PENTANE DIHYDROCHLORIDE 								
Ashton, N., 1957	1 cat			70 mg./kg. once daily for 2 d	P.O	0	Killed	55 d.
Ashton, N., 1957	1 cat			70 mg./kg. once daily for 2 d	P.O	0	Killed	64 d.
Ashton, N., 1957	1 cat			375 mg./kg. once	P.O	0	Killed	155 d.
Ashton, N., 1957	1 cat			35 mg./kg. once daily for 4 d	P.O	0	Killed	50 d.
310. N,N'-DIBENZYLETHYLENEDIAMINE DIACETATE (DBED) 								
Seifter, J., et al., 1954	60 rats	Albino	M & F	0.25–0.5% in the diet for 6 mos	P.O	None		6 mos.
Seifter, J., et al., 1954	14 dogs			10 or 15–50 mg./kg., 3, 6 or 7 times/wk. for total of 11–49 doses.	I.M	0		Up to 7 wks.

[966] Renal glomerular lesions.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
				311. DI-t-BUTYLMETHYLPHENOL 				
Deichmann, W. B., et al., 1955.	6 rats	Wistar albino	M & F	0.2%[967] of diet in lard (1.0% of diet) for 90 d.	P.O.	0[14]	All killed at 90 d.	90 d.
Deichmann, W. B., et al., 1955.	6 rats	Wistar albino	M & F	0.5% of diet in lard (1.0% of diet) for 90 d.[967]	P.O.	0[14]	1 early death (12 d.).	90 d.
Deichmann, W. B., et al., 1955.	6 rats	Wistar albino	M & F	0.8%[967] of diet in lard (1.0% of diet) for 90 d.	P.O.	0[14]	2 early deaths (4 & 5 wks.).	90 d.
Deichmann, W. B., et al., 1955.	6 rats	Wistar albino	M & F	1.0% of diet in lard (1.0% of diet) for 90 d.[967]	P.O.	0[14]	1 early death (13 wks.).	90 d.
Deichmann, W. B., et al., 1955.	6 rats	Wistar albino	M & F	0.2%[967] of diet (gradually increasing to 1.5%) in lard (1.0% of diet) for 90 d.[968]	P.O.	0[14]	4 early deaths	90 d.
Deichmann, W. B., et al., 1955.	60 rats	Wistar	M	0.2, 0.5, 0.8 or 1.0%[969] in diet with 1.0% lard for 2 yrs.	P.O.	0	Many died during 2 yrs.	2 yrs.
Deichmann, W. B., et al., 1955.	30 rats	Wistar	15 āā	0.5% in diet with 1.0% lard for 2 yrs.[969,970]	P.O.	0	Many died during 2 yrs.	2 yrs.
Deichmann, W. B., et al., 1955.	6 dogs	Mongrel	M & F	0.25, 0.50 or 1.0[969] gm./kg. body wt./d., 5 d./wk. for 12 mos. in ground meat.	P.O.	0	100%	12 mos.
Deichmann, W. B., et al., 1955.	60 rats	Wistar	F	0.2, 0.5, 0.8 or 1.0%[969] in diet with 1.0% lard for 2 yrs.	P.O.	0[971]	Many died during 2 yrs.	2 yrs.
				312. 1,4-DICAFFEYLQUINIC ACID 				
Preziosi, P., and Loscalzo, B., 1957.	20 rats		M & F	50–100–200–400 mg./kg., body wt. daily for 40 d. (Soln. 5:100).	I.P.	0		40 d.
Preziosi, P., and Loscalzo, B., 1957.	Rabbits		M & F	50 mg./kg. body wt. (soln. 5:100), daily for 45 d.	I.V.	0		45 d.

[14] No pathology given.
[967] 2 commercial products, 99.7% and 98.8% pure.
[968] Minimal consumption at 1.5% level.
[969] Purified.
[970] Dissolved in lard, heated 30 minutes at 150° C. prior to incorporation in diet.
[971] 3 reticulum cell sarcomas; 1 mammary carcinoma; 1 leukemia. 4/6 controls developed 2 reticulum cell sarcomas, 2 mammary carcinomas. No anatomic pathology.

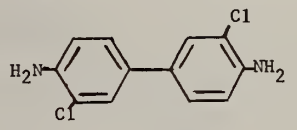
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
313. *O*-DICHLOROBENZENE 								
Hollingsworth, R. L., et al., 1958.	7 guinea pigs.	----------	F	93 ppm. (0.56 mg./l) of vapor 7 hrs./d., 5 d./wk., for 138 exposures.	Inhalation	0	----------	199 d.
Hollingsworth, R. L., et al., 1958.	40 rats	----------	10 āā	49 ppm. (0.29 mg./1) of vapor 7 hrs./d., 5 d./wk., for 6½ mos.	Inhalation	0	----------	6½ mos.
Hollingsworth, R. L., et al., 1958.	10 mice	----------	F	49 ppm. (0.29 mg./l.) of vapor 7 hrs./d., 5 d./wk., for 6½ mos.	Inhalation	0	----------	6½ mos.
Hollingsworth, R. L., et al., 1958.	16 guinea pigs.	----------	8 āā	49 ppm. (0.29 mg./l.) of vapor 7 hrs./d., 5 d./wk., for 6½ mos.	Inhalation	0	----------	6½ mos.
Hollingsworth, R. L., et al., 1958.	18 rats	----------	M	93 ppm. (0.56 mg./l.) of vapor 7 hrs./d., 5 d./wk., for 125 exposures.	Inhalation	0	----------	182 d.
Hollingsworth, R. L., et al., 1958.	10 rats	White	F	18.8 mg./kg. in olive oil soln. 5 d./wk., for 138 doses in 192 d.	P.O., stomach tube.	0	7 at 192 d	192 d.
Hollingsworth, R. L., et al., 1958.	10 rats	White	F	188 mg./kg. in olive oil soln. 5 d./wk., for 138 doses in 192 d.	P.O., stomach tube.	0	5 at 192 d	192 d.
Hollingsworth, R. L., et al., 1958.	10 rats	White	F	376 mg./kg. in olive oil soln. 5 d./wk., for 138 doses in 192 d.	P.O., stomach tube.	0	9 at 192 d	192 d.
Hollingsworth, R. L., et al., 1958.	8 guinea pigs	----------	M	93 ppm. (0.56 mg./l.) of vapor 7 hrs./d., 5 d./wk., for 136 exposures.	Inhalation	0	----------	197 d.
Hollingsworth, R. L., et al., 1958.	17 rats	----------	F	93 ppm. (0.56 mg./l.) of vapor 7 hrs./d., 5 d./wk. for 131 exposures.	Inhalation	0	----------	190 d.
314. P-DICHLOROBENZENE 								
Hollingsworth, R. L., et al., 1956.	8 guinea pigs.	----------	----------	Avg. conc. of 158 ppm. of vapor 7 hrs./d., 5 d./wk., for 157–219 d.[972]	Inhalation	0[973]	100%	219 d.
Hollingsworth, R. L., et al., 1956.	1 monkey	----------	F	Avg. conc. of 158 ppm. of vapor 7 hrs./d., 5 d./wk., for 157–219 d.[972]	Inhalation	0[973]	----------	219 d.

[972] Min. purity 99%.

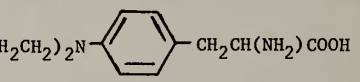
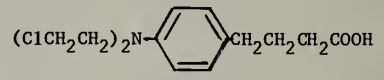
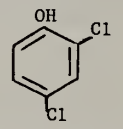
[973] Histopathology negative.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
314. P-DICHLOROBENZENE (Continued)								
Hollingsworth, R. L., et al., 1956.	10 rats			Avg. conc. of 96 ppm. of vapor 7 hrs./d., 5 d./wk., for 6–7 mos.[972]	Inhalation	0		7 mos.
Hollingsworth, R. L., et al., 1956.	8 guinea pigs.			Avg. conc. of 96 ppm. of vapor 7 hrs./d., 5 d./wk., for 6–7 mos.[972]	Inhalation	0		7 mos.
Hollingsworth, R. L., et al., 1956.	7 rabbits			500 mg./kg. fed 5 d./wk., for a total of 263 doses.[972]	P.O., stomach tube.	0		219 d.
Hollingsworth, R. L., et al., 1956.	19 rats		M	798 ppm. of vapor 8 hrs./d., 5 d./wk., total of 1–46 exposures.[972]	Inhalation	0	2 died	Approx. 9 wks.
Hollingsworth, R. L., et al., 1956.	15 rats		F	798 ppm. of vapor 8 hrs./d., 5 d./wk., total of 9–69 exposures.[972]	Inhalation	0	2 died	Approx. 13 wks.
Hollingsworth, R. L., et al., 1956.	16 guinea pigs.		M	798 ppm. of vapor 8 hrs./d., 5 d./wk., total of 1–23 exposures.[972]	Inhalation	0	2 died	4½ wks.
Hollingsworth, R. L., et al., 1956.	16 rabbits		āā M & F	798 ppm. of vapor 8 hrs./d., 5 d./wk., total of 1–62 exposures.[972]	Inhalation	0	4 died	Approx. 14 wks.
Hollingsworth, R. L., et al., 1956.	20 rats		M	Avg. conc. of 341 ppm. of vapor 7 hrs./d., 5 d./wk., for 6 mos.[972]	Inhalation	0		6 mos.
Hollingsworth, R. L., et al., 1956.	8 guinea pigs.		M	Avg. conc. of 341 ppm. of vapor 7 hrs./d., 5 d./wk., for 6 mos.[972]	Inhalation	0		6 mos.
Hollingsworth, R. L., et al., 1956.	8 guinea pigs.		F	Avg. conc. of 341 ppm. of vapor 7 hrs./d., 5 d./wk., for 6 mos.[972]	Inhalation	0		6 mos.
Hollingsworth, R. L., et al., 1956.	10 rats			Avg. conc. of 158 ppm. of vapor 7 hrs./d., 5 d./wk., for 157–219 d.[972]	Inhalation	0		219 d.
Hollingsworth, R. L., et al., 1956.	10 mice		M	Avg. conc. of 158 ppm. of vapor 7 hrs./d., 5 d./wk., for 157–219 d.[972]	Inhalation	0[973]		219 d.
Hollingsworth, R. L., et al., 1956.	2 rabbits		1 M, 1F	Avg. conc. of 158 ppm. of vapor 7 hrs./d., 5 d./wk., for 157–219 d.[972]	Inhalation	0[973]		219 d.
Hollingsworth, R. L., et al., 1956.	5 rabbits	White-Colored	M & F	25.0% soln. (1000 mg./kg.) in olive oil for a total of 92 doses.[972]	P.O., stomach tube.	0	Some deaths	219 d.
Hollingsworth, R. L., et al., 1956.	10 mice		F	Avg. conc. of 96 ppm. of vapor 7 hrs./d., 5 d./wk., for 6–7 mos.[972]	Inhalation	0		7 mos.
Hollingsworth, R. L., et al., 1956.	1 monkey		F	Avg. conc. of 96 ppm. of vapor 7 hrs./d., 5 d./wk., for 6–7 mos.[972]	Inhalation	0		7 mos.
Hollingsworth, R. L., et al., 1956.	10 ducks	White-Peking		0.5% in diet for 35 d.[972]	P.O	0	3 died after 28 d	35 d.
Hollingsworth, R. L., et al., 1956.	10 rats[510]	White	F	18.8 mg./kg. in olive oil solns. which was emulsified with 2 ml. of 5–10% acacia soln., fed 5 d. a wk., for a total of 138 doses.[972]	P.O., stomach tube.	0		192 d.

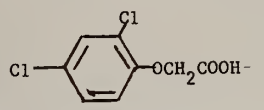
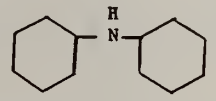
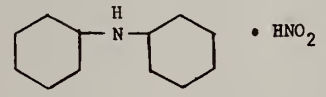
[510] Young adult.
[972] Min. purity 99%.
[973] Histopathology negative.
[974] Cirrhosis and focal hepatic necrosis.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
314. P-DICHLOROBENZENE (Continued)								
Hollingsworth, R. L., et al., 1956.	10 rats[510]	White	F	188 mg./kg. in olive oil soln. which was emulsified with 2 ml. of 5–10% acacia soln., fed 5 d. a wk., for a total of 138 doses.[972]	P.O., stomach tube.	0		192 d.
Hollingsworth, R. L., et al., 1956.	10 rats[510]	White	F	376 mg./kg. in olive oil soln. which was emulsified with 2 ml. of 5–10% acacia soln., fed 5 d./wk., for a total of 138 doses.[972]	P.O., stomach tube.	0[974]		219 d.
Hollingsworth, R. L., et al., 1956.	2 rabbits		1 M, 1 F	Avg. conc. of 96 ppm. of vapor 7 hrs./d., 5 d./wk., for 6–7 mos.[972]	Inhalation	0		7 mos.
315. 3,3′-DICHLOROBENZIDINE 								
Pliss, H. B., 1958	61 rats	White		First 5 mos., 120 mg. injected, thereafter 20 mg. dose; 1.62–3 gm. total dose inj. once a wk. for 10 mos.	S.C	Tumors[975]	35 surviving at time of first tumor.	Over 20 mos.
Pliss, H. B., 1958	50 rats	White		Total dose 4.5 g. in oil or glycerine emulsion.	P.O	Tumors[976]	29 surviving at time of first tumor.	Over 12 mos.
Pliss, H. B., 1958	50 rats	White		Total dose—4.5 g. in oil or glycerine emulsion.	P.O	Tumors[976]	29 surviving at time of first tumor.	Over 12 mos.
Pliss, H. B., 1958	61 rats	White		First 5 mos., 120 mg. inj., thereafter 20 mg. dose; 1.62–3 g. total dose inj. once a wk. per 10 mos.	S.C	Tumors[977]	35 surviving at time of first tumor.	Over 20 mos.
Pliss, G. B., 1959	61 rats	White	25 F, 36 M	20 mg. in 0.5 ml. of 8.8% susp. in glycerine once wkly. up to 11 mos., total dose 1.62–3.0 mg.	S.C	Tumors[978, 979]	40 at 6 mos., 23 over 12 mos.	At least 12 mos.
Pliss, G. B., 1959	67 mice	D	31 F, 36 M	0.1 ml. of 11 or 5.5% susp. in glycerine once wkly. for 11 mos., total dose 130 mg.	S.C	Tumors[980, 981]	20 at 13.5 mos	At least 22 mos.

[510] Young adult.
[972] Min. purity 99%.
[973] Histopathology negative.
[975] 9 with zymbals gland tumors; 1 hepatic tumor; 7 with mammary tumors; 2 hemopoietic tumors; 5 injection site tumors.
[976] 2 with zymbals gland tumors; 4 with mammary tumors; 2 with myosarcomas; 1 hepatic tumor; 3 hemopoietic tumors; 2 cholecystic tumors.
[977] 9 with zymbals gland tumors; 7 with mammary tumors; 5 injection site tumors; 1 hepatic tumor; 2 hemopoietic tumors.
[978] 26 with tumors: 10 squamous cell carcinomas of zymbals glands; 5 sebaceous papillomas or squamous cell carcinomas; 6 fibroadenomas or adenocarcinomas; 2 hemapoietic tumors; 1 salivary gland tumor; 2 musculocutaneous tumors; 4 spindle cell sarcomas; 2 polymorphic cell sarcomas; 1 injection site rhabdomyosarcoma (first tumor at 7 months).
[979] Low spontaneous tumor incidence.
[980] 8 with tumors: 1 injection site sarcoma; 5 hepatomas; 1 hemopoietic tumor; 1 squamous cell carcinoma; 2 pulmonary adenomas (first tumor at 13.5 months).
[981] Spontaneous pulmonary adenoma and hepatic hemangioma in this strain.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
315. 3,3′DICHLOROBENZIDINE (Continued)								
Pliss, G. B., 1959	73 mice	D	22 F, 51 M	0.1 ml. of 1.1% susp. in sunflower oil in food for 10 mos., total dose 127.5–135 mg.	P.O	Tumors[981, 982].	34 at 12 mos., 18 at 18.5 mos.	
Pliss, G. B., 1959	23 mice	D	15 F, 8 M	0.1 ml. of 11 or 5.5% susp. in glycerine twice wkly. for 11 mos., total dose 265 mg.	S.C	Tumors[981, 983].	8 at 12.5 mos	At least 22 mos.
Pliss, G. B., 1959	50 rats	White	15 F, 35 M	0.5–1.0 ml. of 4.4% susp. in sunflower oil in food, total dose 4.53 g.	P.O	Tumors[979, 984].	34 at 6 mos., 27 over 12 mos.	At least 24.5 mos.
316. P-DI-(2-CHLOROETHYL)AMINO-d-PHENYLALANINE 								
Salaman and Roe, 1956	25 mice	Albino "S" strain.		10 wkly. applications of 0.1% soln. in methanol (total dose—3.0 mg.)[985].	Skin	4 (total of 8 paps.).	22 at about 30 wks.	Approx. 32 wks.
Salaman and Roe, 1956	25 mice	Albino "S" strain		10 wkly. applications of 0.01% to 0.1% soln. in methanol (total dose—1.44 mg.)[985].	Skin	2 (total of 7 paps.).	19 at about 30 wks.	Approx. 32 wks.
317. N,N-DI(2-CHLOROETHYL)-p-AMINOPHENYL BUTYRIC ACID 								
Salaman and Roe, 1956	25 mice	Albino "S" strain.		10 wkly. applications, 8 at 0.1% & 2 at 0.05%, soln. in methanol (total dose—2.7 mg.)[985].	Skin	11 (total of 30 pap.).	19 at about 30 wks.	Approx. 32 wks.
318. 2,4-DICHLOROPHENOL 								
Boutwell, R. K., and Bosch, D. K., 1959.	23 mice	Sutter	F	20% soln. in benzene given twice wkly. for 39 wks.	Skin	Tumors[986]	16 at 24 wks	39 wks.

[979] Low spontaneous tumor incidence.
[981] Spontaneous pulmonary adenoma and hepatic hemangioma in this strain.
[982] 4 with tumors: 2 hepatomas (1 associated with sebaceous gland carcinoma); 2 hemangiomas; 1 pulmonary adenoma (first tumor at 18.5 months).
[983] 5 with tumors: 2 injection site sarcomas; 3 hepatomas; 1 hemopoietic tumor; 1 pulmonary adenoma (first tumor at 12.5 months).
[984] 23 with tumors: 7 squamous cell carcinomas of zymbal glands; 3 sebaceous papilloadenomas or squamous cell carcinomas; 7 mammary fibroadenomas or adenocarcinomas; 2 enteric adenocarcinomas; 3 urinary cystic papillomas; 3 hemopoietic tumors; 1 hepatic tumor; 1 thyroid tumor; 2 salivary gland tumors; 2 musculocutaneous tumors.
[985] 18 weekly applications of 0.17% croton oil in acetone (first alternating at 3–4 day intervals with test substance) begun 30 days after initial treatment.
[986] 75% with papillomas (avg. 1.62/mouse). 62% with carcinoma at 39 weeks.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
319. 2,4-DICHLOROPHENOXYACETIC ACID 								
Rowe, V. K., and Hymas, T. A., 1954.	15 rats		F	100, 300 or 1,000 ppm. in diet for 113 d.	P.O	0		113 d.
Fontana, A., and Ollino, P., 1955.	5 rats	Albino		2% soln. in water daily	Skin	0	1 dying at 20th, 27th, 28th, 35th & 42nd d.	42 d.
Fontana, A., and Ollino, P., 1955.	5 rats	Albino		1 ml. of 2% soln. in water in the diet daily.	P.O	0	1 dying at 95th, 140th and 160th d., 2 sacrificed at 6 mos.	6 mos.
320. DICYCLOHEXYLAMINE 								
Pliss, G. B., 1958	57 mice	D	22 M & 35 F	0.05 ml. of 2.6% soln. in sunflower oil & water once daily for 11–12½ mos., total 60.1–79.3 mg.	S.C	Tumors[987, 988].	15 over 12 mos	At least 16 mos.
Pliss, G. B., 1958	50 rats		25 M & F	30 mg. for 2 mos., 0.5 ml. of 5% soln. in sunflower oil & water in food 6 d./wk. up to 12 mos., total 8875 mg.	S.C. & P.O	Tumors[989, 990].	36 over 12 mos., 22 over 18 mos.	At least 22.5 mos.
321. DICYCLOHEXYLAMINE NITRITE 								
Pliss, G. B., 1958	54 mice	D	31 M & 23 F	0.1 ml. of a 1% aqueous soln. daily for 12–13 mos., total 51–59 mg.	S.C	Tumors[991, 992].	28 over 6 mos., 23 over 12 mos.	At least 23 mos.
Pliss, G. B., 1958	56 rats		34 M & 22 F	0.5 ml. of 2% aqueous soln. once a wk. for 11–13 mos., total 480–1195 mg.	S.C	Tumors[990, 993].	37 over 6 mos., 31 over 12 mos.	At least 24 mos.

[987] 3 spindle cell sarcomas at 12, 14 and 15.5 months; 1 polymorphocellular sarcoma at 16 months. All at injection site.

[988] Successfully transplanted through 26 generations.

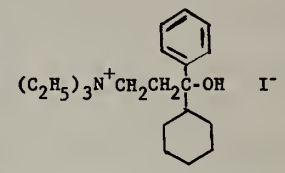
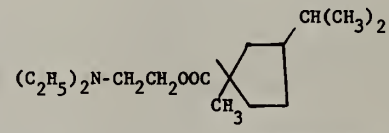
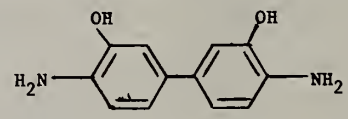
[989] 1 hepatoma at 21 months; 1 mesenteric sarcoma at 22.5 months.

[990] 130 octadecylamine and methylstearylamine treated controls negative for over 20 months.

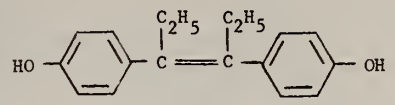
[991] 1 hepatoma at 13.5 months; 1 pulmonary papillary cystadenocarcinoma at 17 months; 1 papillary pulmonary adenoma at 19 months; 1 hepatoma at 20.5 months; 1 cavernous hepatic hemangioma at 23 months.

[992] Spontaneous pulmonary adenomas, leukosis, and thymomas in this strain.

[993] 1 pulmonary squamous cell carcinoma with metastases at 8 months; 1 fibrosarcoma at 14.5 months; 1 abdominal polymorphocellular sarcoma with metastases at 15 months; 1 lymphosarcoma; 2 mammary fibroadenomas at 22 months; 1 carcinoma of zimbals gland at 24 months.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
321. DICYCLOHEXYLAMINE NITRITE								
Pliss, G. B., 1958	30 rats		17 M & 13 F	1 ml. of 3% aqueous soln. in food 6 d./wk. for 12 mos., total 9180 mg.	P.O	Tumors[990, 994].	21 over 6 mos., 16 over 12 mos.	At least 17 mos.
322. 3-DIETHYLAMINO-1-CYCLOHEXYL-1-PHENYL-1-PROPANOL-ETHIODIDE 								
Osterberg, A. E.,[664] and Cunningham, R. W., 1955.	Dogs				P.O	0[995]		54 wks.
Osterberg, A. E.,[664] and Cunningham, R. W., 1955.	Rats			[996]	P.O			
323. β-DIETHYLAMINOETHYL FENCHOLATE 								
Ludwig, K. A., et al., 1954	3 dogs			10 mg./kg. of a 0.9% saline soln. 3 times daily, 5 d./wk.	I.V	0	1 was sacrificed at 4½ wks.	6 wks.
Ludwig, K. A., et al., 1954	2 monkeys			5 mg./kg. of a 0.9% saline soln. twice daily, 5 d./wk.	I.V	0	1 sacrificed at 60 d.	137 d.
324. 3,3′-DIHYDROXYBENZIDINE 								
Bonser, et al., 1956	15 mice	Stock Albino	F	0.1 cc. of 3% susp.[798] in arachis oil, twice wkly. for 52 wks. (Total dose per mouse, 312 mg.).	S.C	4 (lymphomas).	6 alive at 20 wks	70–89 wks.
Bonser, et al., 1956	15 mice	Stock Albino	M	0.1 cc. of 3% susp. in arachis oil, twice wkly. for 52 wks. (Total dose per mouse, 312 mg.).	S.C	1 (benign intestinal polyp).	8 alive at 20 wks	70–89 wks.

[664] An abstract.
[798] As hydrochloride.
[990] 130 octadecylamine and methylstearylamine treated controls negative for over 20 months.
[994] 1 abdominal polymorphocellular sarcoma of abdominal cavity with metastases at 17 months. (Untransplantable).
[996] No evidence of chronic toxicity.
[995] LD_{50} was 1100 mg/kg.
[997] Daily application for 100 days; every second day for 44 days.
[998] Fertility appreciably damaged.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
325. 4,4′-DIHYDROXY-α,β-DIETHYLSTILBENE 								
Benko, A., et al., 1953	2 mice		M & F	2.5% in olive oil daily painting.[997]	Skin	0		144 d.
Underwood, E. J., et al., 1953	45 sheep[306]	Merino	F	0.11, 0.33, & 1.0 mg. in peanut oil daily for 6 mos.	I.M	0[998,999]		2½ yrs.
Underwood, E. J., et al., 1953	50 sheep[1000]	Merino	F	1.2, 4.8 & 16 mg. in peanut oil daily for 6 mos.	I.M	0[1001,1002]		2½ yrs.
Brandes, D., and Bourne, G. H., 1954.	24 mice[1003]	Strong A	M	10 mg. implanted for 18 d.[1004]	S. C. Implant	0	9 observed up to 21 d. after removal of implant.	Up to 39 d.
Dunning and Curtis, 1954	13 rats	A×C Line 9935	F	4–6 mg. in cholesterol pellet[1006]	S.C	Tumors[1006]	416 d. avg	580 d.
Dunning and Curtis, 1954	16 rats	A×C Line 9935	F	4–6 mg. in cholesterol pellet[1007]	S.C	Tumors[1008]	316 d. avg	420 d.
Glasser, S. T., 1954	Rats, adult	Long-Evans	M	0.1 mg. daily for 21 d.[1009]	Inj	([1010])		31–51 d.
Horning, E. S., and Whittick, J. W., 1954.	40 hamsters	Cricetus Auratus.	M	20 mg. pellet of pure compound	S.C. r. flank	Tumors[1011]	8 killed at 6½ mos	
Horning, E. S., 1954	21 hamsters	Golden	M	20 mg. pellet.[736]	S.C. l. flank	Tumors[1012]		302 d.
Horning, E. S., 1954	21 hamsters.[1013]	Golden	M	20 mg. pellet[736] implanted 4–5 wks. after nephrectomy.	S.C. l. flank	Tumors[1014]	2 early deaths	210 d.
Richardson, F. L., and Pearson, B., 1954.	160 mice	F_1 hybrids, RIII & C57BL.	M & F	Pellets 5–6 mg. in wt. with 80% cholesterol.	S.C	Tumors[1016]	Sacrificed at intervals.	7 mos.
Bacon, R. L., and Kirkman, H., 1955.	Hamsters		M	20 mg. compressed pellet implanted up to 559 d. or more.	S.C. implant	Tumors[1016]		At least 559 d.
Glasser, S. R., and Leathem, J. H., 1955.	Rats[119]	Long-Evans	M	0.1 mg. in oil daily for 21 d.[1017]	Inj	0[1018]	Sacrificed 0, 10, 20 & 30 d. after removal of drug.	Up to 55 d.

[119] Adult.
[306] 15/group.
[736] Pure.
[999] 15 peanut oil controls normal.
[1000] 10/group.
[1001] Substantial fertility damage, cystic endometritis.
[1002] 10 peanut oil controls normal.
[1003] Castrated at 4 months.
[1004] 15 killed up to 20 days after implant.
[1006] Control diet.
[1006] 85% with mammary tumors; avg. latent period 346 days. 1 vaginal papilloma and 1 adrenal carcinoma.
[1007] Tryptophan deficient diet.
[1008] 56% mammary tumors; avg. latent period 273 days. 1 leukemia; 1 ovarian fibrosarcoma and 1 adrenal carcinoma.
[1009] 7 per group. Various food diets, basal diet and protein-free diet, for recovery periods of 0, 10, 20 and 30 days begun after treatment.
[1010] Basal diet recipients immediately permitted to regain weight loss. Protein-free diet recipients: no recovery of weight loss.
[1011] Multiple renal tubular carcinoma (bilateral). 28 with pituitary chromophobe adenomas (23 pars anterior, 5 pars intermedia).
[1012] 100% renal carcinoma from 260th day.
[1013] Unilateral nephrectomy.
[1014] 100% renal carcinoma from 180th day, except 2 early deaths.
[1015] Mammary adenocarcinomas.
[1016] One testicular adenoma.
[1017] Various diets, protein and basal.
[1018] Adrenal hypertrophy.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
325. 4,4′-DIHYDROXY-α, β-DIETHYLSTILBENE (Continued)								
Lindsay, S., et al., 1955	49 fowls[1019]	White Leghorn	M	2–12 mg. pellets implanted at monthly intervals for 10 mos.[1020] Feed Purina broiler chow with 5% cottonseed oil.	S.C	0[1021]	Many killed while still under treatment.	22 mos.
Mackenzie, 1955	17 rats	WAG[1022]	F	2 pellets of the compressed crystalline substance weighing 5–6 mg.; first at 4 wks. of age; second, 1–3 mo. later	Implantation into the muscles of the lumbar region (1 on each side).	0[1023]	Kept under observation until natural death.	Last died at 672 d.
Mackenzie, 1955	23 rats	Albino[1024]	F	2 pellets of the compressed crystalline substance weighing 5–6 mg.; first, at 4 wks. of age; second, 1–3 mos. later.	Implantation into the muscles of the lumbar region (1 on each side).	1[1025]	Kept under observation until natural death.	Last animal died after about 572 d.
Mackenzie, 1955	8 rats	Newcastle Black & white (hooded)[1026].	F	2 pellets of the compressed crystalline substance; the first at 4 wks. of age; the second, 1–3 mos. later.	Implantation into the muscles of the lumbar region (1 on each side).	2 mammary carc.	Kept under observation until natural death.	Last animal died after about 600 d.
Steinberger, E., and Nelson, W. O., 1955.	4 rats[119]	Long-Evans	M	1 mg. daily for 30 d	S.C	0[14]	All sacrificed	30 d.
Clifton, K. H., and Meyer, R. K., 1956.	Rats	Holtzman	M	15 mg. pellets implanted every 3 or 4 mos., up to 462 d.	S.C	Tumors[1027]		At least 19 mos.
Gardner and Ferrigno, 1956	Mice[1028]	BC	F	250 μg. in 0.05 cc. of sesame oil, wkly. for an avg. of above 39 wks.	S.C	2[1029]	First died after 259 d.	Last died after 280 d.
Gardner and Ferrigno, 1956	Mice[1028]	BC	F	8 mg. pellet containing 1 part stilbestrol to 3 parts cholestrol.	Fixed in upper vagina.	1[1030]		245 d.
Horning, E. S., 1956	20 hamsters	Golden	M	One or two 20 mg. pellets for 10½ mos.	S.C. l. flank	Tumors[1031]		12 mos.
Horning, E. S., 1956	Hamsters[1032]	Golden	M	20 mg. pellet of pure compound	S.C. implant	Renal tumors (approx. 70 to 80%)[1033].		At least 12 mos.

[14] No pathology given.
[119] Adult.
[1019] Age: 3–4 months.
[1020] Thoracic and abdominal lesions conform to non-neoplastic disease. Increased severity due to excessive lipid infiltration.
[1021] Pellets removed from survivors at 10 months.
[1022] Glaxo strain derived from Wistar albino; spontaneous mammary carcinoma rare.
[1023] No mammary carcinoma; 4 benign mammary tumors.
[1024] From Royal Cancer Hospital, London, originally commercial origin. Spontaneous mammary carcinoma never reported.
[1025] 1 with mammary carcinoma; 1 with precancerous mammary lesion; 1 with benign mammary tumor.
[1026] Known incidence of spontaneous mammary tumors.
[1027] Pituitary tumors at 9–14 months. "Tumor" designated any pituitary >30 mg. weight.
[1028] All multiparous (1–5 pregnancies). Only uterine lesions reported (est. 5%).
[1029] 2 with multiple subserosal uterine lesions (resemble carcinomas) with infiltrative uterocervical tumor.
[1030] Multiple subserosal uterine lesions (resemble carcinomas) and invasive uterocervical carcinoma.
[1031] 18 palpable renal carcinomas; 2 early cortical tumors. Metastases predominant in animals given 2 pellets; 65% with pituitary tumors after 10 months treatment.
[1032] Age: 6–8 weeks.
[1033] 9–12 months post-implantation.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
325. 4,4′-DIHYDROXY-α, β-DIETHYLSTILBENE (Continued)								
Horning, E. S., 1956	Hamsters[1032]	Golden	M	Two 20 mg. pellets of pure compound, 12 wks. apart.	S.C. implant	Renal tumors (up to 100%).		At least 12 mos.
Meyer, R., and Clifton, K., 1956.	Rats	Holtzman	M	15 mg. pellet implanted every 3 or 4 mos.	S.C.	Tumors[1034]	87 killed from 10–466 d.	466 d.
Weiler, E., 1956	Hamsters			20 mg. pellet of pure stilbestrol	S.C. implant in r. or l. flank region.	Kidney carc.[1035, 1035].		At least 12 mos.
Andervont, H. B., et al., 1957	40 mice	BALB/c	Mq	20% in 5 mg. cholesterol pellet.[1037]	S.C. implant	0	6 died before age of 7 mos.	At least 9 mos.
Andervont, H. B., et al., 1957	54 mice	BALB/c	M	20% in 5 mg. cholesterol pellet.[1038]	S.C. implant	Tumors[1039]	Avg. 8 mos	Up to 10 mos.
Andervont, H. B., et al., 1957	12 mice	BALB/c	M	20% in cholesterol pellet for 4 wks., then 5–12 mos. later given another pellet.	S.C. implant	Tumors[1040, 1041].	Killed at 19 mos. of age.	17 mos.
Andervont, H. B., et al., 1957	34 mice	BALB/c	M	20% in cholesterol pellet for 16 wks., then 5–12 mos. later given another pellet.	S.C. implant	Tumors[1042, 1043].	Killed at 19–22 mos. of age.	20 mos.
Andervont, H. B., et al., 1957	164 mice	BALB/c	M	20% in 5 mg. cholesterol pellet, 3 mm. long & 1.75 mm. wide.	S.C. implant	Tumors[1044]	Avg. age 9 mos	At least 16 mos.
Andervont, H. B., et al., 1957	53 mice	BALB/c	M	10% in 5 mg. cholesterol pellet, 3 mm. long & 1.75 mm. wide.	S.C. implant	Tumors[1045]	7 at 15 mos	Up to 16 mos.
Andervont, H. B., et al., 1957	46 mice	BALB/c	M	5% in 5 mg. cholesterol pellet, 3 mm. long & 1.75 mm. wide.	S.C. implant	Tumors[1046]	Killed at 15–16 mos.	Up to 16 mos.
Andervont, H. B., et al., 1957	42 mice	BALB/c	M	20% in cholesterol pellet for 24 wks., then 5–12 mos. later given another pellet.	S.C. implant	Tumors[1047, 1048].	Killed at 20–21 mos. of age.	19 mos.
Andervont, H. B., et al., 1957	23 mice	BALB/c	M	20% in cholesterol pellet for 28 wks., then 5–12 mos. later given another pellet.	S.C. implant	Tumors[1049, 1050].	Killed at 19–20 mos. of age.	18 mos.
Kirkman, H., and Wurster, D. H., 1957.	27 hamsters.[1051]	Syrian	F	20 mg. pellets	S.C.	Tumors[1052]		250 d.
Kirkman, H., and Wurster, D. H., 1957.	53 hamsters	Syrian	F	20 mg. pellets	S.C.	0		250 d.
Kirkman, H., and Wurster, D. H., 1957.	5 hamsters	Syrian	F	20 mg. pellets started during late metestrum.	S.C.	Tumors[1053]		250 d.

[1032] Age: 6–8 weeks.
[1034] Pituitary tumors after 9 months treatment.
[1035] 8–12 months post-implantation.
[1035] Study of normal kidney and renal carcinoma antigenic relationship.
[1037] Previously implanted other mice for 15–22 months.
[1038] Previously implanted other mice for 16 weeks.
[1039] 23 (43%) with testicular tumors.
[1040] 1 testicular tumor 2 months after 2nd pellet.
[1041] 10 controls with single 20% stilbestrol-cholesterol pellet negative.
[1042] 4 testicular tumors 2 months after 2nd pellet.
[1043] 27 controls with single 20% stilbestrol-cholesterol pellet negative.
[1044] 128 (78%) with testicular tumors.
[1045] 31 (58%) with testicular tumors.
[1046] 7 (15%) with testicular tumors.
[1047] 21 testicular tumors at 1–4 months after 2nd pellet.
[1048] 35 controls with single 20% stilbestrol-cholesterol pellet negative.
[1049] 12 testicular tumors at 1–4 months after 2nd pellet.
[1050] 1/19 controls with single 20% stilbestrol-cholesterol pellet developed testicular tumor.
[1051] Ovariectomized.
[1052] 14 with malignant renal neoplasms.
[1053] 1 with malignant renal neoplasms.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
325. 4,4′-DIHYDROXY-α,β-DIETHYLSTILBENE (Continued)								
Kirkman, H., and Wurster, D. H., 1957.	3 hamsters	Syrian	F	20 mg. pellets from 2nd day of life	S.C.	Tumors[1054]		250 d.
Kirkman, H., and Wurster, D. H., 1957.	5 hamsters	Syrian	F	20 mg. pellets from 10th d. of life	S.C.	Tumors[1054]		250 d.
Kirkman, H., and Wurster, D. H., 1957.	10 hamsters	Syrian	F	20 mg. pellets from 18th d. of life	S.C.	Tumors[1064]		250 d.
Kirkman, H., and Wurster, D. H., 1957.	57 hamsters	Syrian	M	20 mg. pellets	S.C.	Tumors[1055]		250 d.
Paschkis, K. E., et al., 1957	Hamsters	Golden		Unspecified amt. for 8 mos		Tumor[1056]		8 mos.
Richardson, F. L., 1957	12 mice[1057]	(RIII x C57L)F_1	F	20% in cholesterol pellet weighing 7–8 mg.[1058]	S.C.	83.3% (mammary adenocarcinoma)[1069].	Killed on evidence of tumor.	Approx. 24.0 mos.
Richardson, F. L., 1957	230 mice[282]	(RIII x C57L)F_1	M	20% in cholesterol pellet weighing 7–8 mg.	S.C.	84.3% (mammary adenocarcinomas)[1060].	Killed on evidence of tumor.	Approx. 25.1 mos.
Richardson, F. L., 1957	34 mice[282]	(RIII x C57L)F_1	M	20% in cholesterol pellet weighing 7–8 mg.[1061]	S.C.	8.8% (mammary adenocarcinomas)[1062].	Killed on evidence of tumor.	Approx. 26.5 mos.
Richardson, F. L., 1957	56 mice[282]	(RIII x C57L)F_1	M	20% in cholesterol pellet weighing 7–8 mg.[1063]	S.C.	10.7% (mammary adenocarcinomas)[1064].	Killed on evidence of tumor.	Approx. 24.6 mos.
Richardson, F. L., 1957	48 mice[282]	(RIII x C57L)F_1	M	20% in cholesterol pellet weighing 7–8 mg.[1065]	S.C.	2.1% (mammary adenocarcinomas)[1066].	Killed on evidence of tumor.	Approx. 26.6 mos.

[282] Age: 8 weeks.
[1054] 3 with malignant renal neoplasms.
[1055] 56 with malignant renal neoplasms.
[1056] 1 female with renal tumor.
[1057] Virgin, age 8 weeks.
[1058] Pellets removed 4 weeks after implantation followed by 10 thrice-weekly I.P. injections of 20 I.U. of prolactin (luteotrophin).
[1060] Tumor at age 10.9 months (avg.).
[1061] Pellets removed 8 weeks after implantation.
[1062] Tumor at age 17.7 months (avg.).
[1063] Pellet removed 6 weeks after implantation.
[1064] Tumor at age 18.7 months (avg.).
[1065] Pellets removed 4 weeks after implantation.
[1066] Tumor at age 11.2 months (avg.).
[1069] Tumor at age 19.3 months (avg.).

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
325. 4,4′-DIHYDROXY-α,β-DIETHYLSTILBENE (Continued)								
Richardson, F. L., 1957	5 mice[282]	(RIII x C57L)F_1	M	20% in cholesterol pellet weighing 7–8 mg.[1057]	S.C	20.0% (mammary adenocarcinomas)[1068]	Killed on evidence of tumor.	Approx. 21.1 mos.
Richardson, F. L., 1957	6 mice[282]	(RIII x C57L)F_1	M	20% in cholesterol pellet weighing 7–8 mg.[1069]	S.C	0		Avg. of 25.4 mos.
Richardson, F. L., 1957	91 mice[282]	(C57L x RIII)F_1	F	20% in cholesterol pellet weighing 7–8 mg.	S.C. (pituitary adenomas)[1070]	67.0%	Killed on evidence of tumor.	Approx. 27.5 mos.
Richardson, F. L., 1957	90 mice[282]	(C57L x RIII)F_1	M	20% in cholesterol pellet weighing 7–8 mg.	S.C	16.3% (pituitary adenomas)[1071]	Killed on evidence of tumor.	Approx. 27 mos.
Richardson, F. L., 1957	8 mice[1057]	(RIII x C57L)F_1	F	20% in cholesterol pellet weighing 7–8 mg.[1069]	S.C	87.5% (mammary adenocarcinomas)[1072]	Killed on evidence of tumor	Approx. 27.8 mos.
Richardson, F. L., 1957	40 mice[1057]	(RIII x C57L)F_1	F	20% in cholesterol pellet weighing 7–8 mg.[1065]	S.C	75.0% (mammary adenocarcinomas)[1073]	Killed on evidence on tumor.	Approx. 31.8 mos.
Richardson, F. L., 1957	13 mice[1057]	(RIII x C57L)F_1	F	20% in cholesterol pellet weighing 7–8 mg.[1067]	S.C	92.3% (mammary adenocarcinomas)[1074]	Killed on evidence of tumor.	Approx. 24.3 mos.
Richardson, F. L., 1957	174 mice[1057]	(RIII x C57L)F_1	F	20% in cholesterol pellet weighing 7–8 mg.	S.C	86.8% (mammary adenocarcinomas)[1075]	Killed on evidence of tumor.	Approx. 20.6 mos.
Richardson, F. L., 1957	52 mice[1057]	(RIII x C57L)F_1	F	20% in cholesterol pellet weighing 7–8 mg.[1061]	S.C	88.6% (mammary adenocarcinomas)[1076]	Killed on evidence of tumor.	Approx. 27.6 mos.

[282] Age: 8 weeks.
[1057] Virgin, age 8 weeks.
[1051] Pellets removed 8 weeks after implanation.
[1055] Pellets removed 4 weeks after implanation.
[1057] Pellets removed 8 weeks after implantation followed by 10 thrice-weekly I.P. injections of 20 I.U. of prolactin (luteotrophin).
[1068] Tumor at age 8.0 months (avg.).
[1059] Pellets removed 6 weeks after implantation followed by 10 thrice-weekly I.P. injections of 20 I.U. of prolactin (luteotrophin).
[1070] Tumor at age 17.7 months (avg.). (1st at 13 months.)
[1071] Tumor at age 16.3 months (avg.). (1st at 11.5 months.)
[1072] Tumor at age 18.4 months (avg.).
[1073] Tumor at age 19.6 months (avg.).
[1074] Tumor at age 15.5 months (avg.).
[1075] Tumor at age 11.1 months (avg.).
[1075] Tumor at age 16.9 months (avg.).

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
325. 4,4′-DIHYDROXY-α, β-DIETHYLSTILBENE (Continued)								
Andervont, H. B., et al., 1958	31 mice	C57BL	M	10% in 5 mg. cholesterol pellet	S.C. r. axilla	0	Avg. age 19 mos	At least 13 mos.
Andervont, H. B., et al., 1958	13 mice	C57BL	M	20% in 5 mg. cholesterol pellet	S.C. r. axilla	0	Avg. age 16 mos	At least 6 mos.
Andervont, H. B., et al., 1958	26 mice[198]	I x C3H	M	20% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1077]	Avg. age 20 mos	22 mos.
Andervont, H. B., et al., 1958	45 mice[198]	C57BL	M	20% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1078]	Avg. age 17 mos	22 mos.
Andervont, H. B., et al., 1958	29 mice[195]	I x C57BL	F	5% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1079]	Avg. age 21 mos	22 mos.
Andervont, H. B., et al., 1958	51 mice[198]	1 x C57BL	M	20% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1080]	Avg. age 19 mos	22 mos.
Andervont, H. B., et al., 1958	19 mice[195]	DBA/2 x I	F	5% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1081]	Avg. age 22 mos	22 mos.
Andervont, H. B., et al., 1958	11 mice[195]	DBA/2	F	2.5% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1082]	Avg. age 21 mos	22 mos.
Andervont, H. B., et al., 1958	24 mice	BALB/c x DBA/2.	M	20% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1083]	Avg. age 11 mos	15–16 mos.
Andervont, H. B., et al., 1958	44 mice	BALB/c x DBA/2.	F	5% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1084]	Avg. age 23 mos	22 mos.
Andervont, H. B., et al., 1958	20 mice	RIII	M	20% in 5 mg. cholesterol pellet	S.C. r. axilla	0	Avg. age 9 mos	At least 3 mos.
Andervont, H. B., et al., 1958	25 mice	RIII	M	10% in 5 mg. cholesterol pellet	S.C. r. axilla	0	Avg. age 8 mos	At least 2 mos.
Andervont, H. B., et al., 1958	16 mice[198]	RIII	M	10% in 5 mg. cholesterol pellet	S.C. r. axilla	0	Avg. age 16 mos	22 mos.
Andervont, H. B., et al., 1958	27 mice[195]	BALB/c x C57BL.	F	2.5% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1118]	Avg. age 22 mos	22 mos.
Andervont, H. B., et al., 1958	30 mice[195]	BALB/c x C57BL.	F	5% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1119]	Avg. age 22 mos	22 mos.
Andervont, H. B., et al., 1958	23 mice[195]	I x C57BL	F	2.5% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1120]	Avg. age 21 mos	22 mos.
Andervont, H. B., et al., 1958	15 mice	I	M	20% in 5 mg. cholesterol pellet	S.C. r. axilla	0	Avg. age 10 mos	At least 4 mos.
Andervont, H. B., et al., 1958	22 mice[198]	I	M	20% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1121]	Avg. age 14 mos	22 mos.
Andervont, H. B., et al., 1958	25 mice[195]	C3H	F	2.5% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1122]	Avg. age 23 mos	22 mos.
Andervont, H. B., et al., 1958	25 mice[195]	DBA/2 x C57BL.	F	2.5% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1123]	Svg. age 22 mos	22 mos.

[195] Virgin.
[198] Castrated.
[1077] 1 mammary, 3 pulmonary and 1 pituitary tumors; 4 hepatomas; 1 S.C. fibrosarcoma; 2 lymphocytic lesions.
[1078] 3 pituitary tumors, 7 lymphocytic lesions.
[1079] 1 pulmonary tumor, 8 lymphocytic lesions.
[1080] 4 pulmonary and 8 pituitary tumors, 1 hepatoma, 12 lymphocytic lesions.
[1081] 4 pulmonary tumors, 4 lymphocytic lesions.
[1082] 1 pulmonary tumor, 1 lymphocytic lesion.
[1083] 1 mammary tumor, 16 testicular tumors.
[1084] 1 mammary and 6 pulmonary tumors, 2 cortical carcinomas, 3 hemangioendotheliomas, 6 lymphocytic lesions.
[1118] 2 pulmonary tumors, 1 hepatoma and 1 hemangioendothelioma.
[1119] 9 pulmonary tumors, 4 lymphocytic lesions.
[1120] 1 pheochromocytoma, 2 pulmonary tumors, 5 lymphocytic lesions.
[1121] 1 cortical carcinoma, 4 lymphocytic lesions.
[1122] 1 mammary tumor, 7 hepatomas, 2 S.C. fibrosarcomas, 4 lymphocytic lesions.
[1123] 1 hepatoma, 1 hemangioendothelioma.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
325. 4,4′-DIHYDROXY-α, β-DIETHYLSTILBENE (Continued)								
Andervont, H. B., et al., 1958	26 mice[195]	DBA/2 x C57BL.	F	5% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1124]	Avg. age 22 mos	22 mos.
Andervont, H. B., et al., 1958	26 mice[198]	DBA/2 C57BL	M	10% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1125]	Avg. age 22 mos	22 mos.
Andervont, H. B., et al., 1958	13 mice[195]	DBA/2 x I	F	2.5% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1125]	Avg. age 22 mos	22 mos.
Andervont, H. B., et al., 1958	111 mice[1127]	BALB/c x C3HF$_1$[1104].	F	5% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1128]	Avg. age 23 mos	At least 21 mos.
Andervont, H. B., et al., 1958	25 mice[198]	RIII x C3H	M	20% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1129]	Avg. age 15 mos	22 mos.
Andervont, H. B., et al., 1958	16 mice[195]	RIII x C3H	F	5% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1130]	Avg. age 24 mos	22 mos.
Andervont, H. B., et al., 1958	49 mice[198]	BALB/c x DBA/2.	M	20% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1131]	Avg. age 21 mos	22 mos.
Andervont, H. B., et al., 1958	32 mice	C3H	M	20% in 5 mg. cholesterol pellet	S.C. r. axilla	4[1132]	Avg. age 20 mos	At least 14 mos.
Andervont, H. B., et al., 1958	50 mice[198]	C3H	M	20% in 5 mg. cholesterol pellet	S.C. r. axilla	27[1133]	Avg. age 19 mos	22 mos.
Andervont, H. B., et al., 1958	27 mice[195]	C57BL	F	2.5% in 5 mg. cholesterol pellet	S.C. r. axilla	0[1134]	Avg. age 17 mos	22 mos.
Andervont, H. B., et al., 1958	226 mice[1127]	BALB/c x C3HF$_1$[1104].	F	5% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1135]	Avg. age 24 mos	At least 21 mos.
Andervont, H. B., et al., 1958	56 mice[195]	BALB/c x RIII	F	5% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1136]	Avg. age 22 mos	22 mos.
Andervont, H. B., et al., 1958	20 mice[195]	I x C3H	F	5% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1137]	Avg. age 23 mos	22 mos.
Andervont, H. B., et al., 1958	32 mice[195]	C57BL	F	5% in 5 mg. cholesterol pellet	S.C. r. axilla	0[1138]	Avg. age 17 mos	22 mos.
Andervont, H. B., et al., 1958	39 mice[195]	DBA/2 x C3H	F	5% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1139]	Avg. age 23 mos	22 mos.
Andervont, H. B., et al., 1958	29 mice[195]	DBA/2 x C3H	F	2.5% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1140]	Avg. age 23 mos	22 mos.
Andervont, H. B., et al., 1958	149 mice[198]	BALB/c x C3H4[1104].	M	20% in 5 mg. cholesterol pellet	S.C. r. axilla	108[1141]	Avg. age 15 mos	At least 19 mos.
Berg, O. Asbjörn, 1958	3 dogs[1142]	Airedale terriers	M	0.20 and 0.23 mg./kg./d. for 80 d	P.O	0[1143]		90 d.

[195] Virgin.
[198] Castrated.
[1104] C3H males carrying mammary tumor agent.
[1124] 1 S.C. fibrosarcoma.
[1125] 1 hepatoma, 1 pituitary tumor.
[1125] 2 pulmonary tumors, 1 hemangioendothelioma.
[1127] Breeders.
[1128] 46 with mammary tumors.
[1129] Mammary tumors (20 adenocarcinomas. 1 adenoacanthoma), 1 pulmonary tumor, 1 hepatoma.
[1130] 4 mammary adenocarcinomas, 1 pulmonary tumor, 1 hepatoma, 1 S.C. fibrosarcoma, 1 hemangioendothelioma, 2 lymphocytic lesions.
[1131] 3 mammary, 7 pulmonary and 1 pituitary tumor, 2 cortical carcinomas, 1 hemangioendothelioma, 5 lymphocytic lesions.
[1132] 4 mammary tumors.
[1133] 27 mammary adenocarcinomas, 6 hepatomas, 6 pulmonary tumors, 2 S.C. fibrosarcomas, 1 lymphocytic lesion.
[1134] 6 lymphocytic lesions.
[1135] Mammary tumors (71 adenocarcinomas, 5 adenoacanthoma, 1 carcinosarcoma, 1 misc.).
[1136] 1 mammary, 3 pulmonary and 1 pituitary tumors, 14 lymphocytic lesions.
[1137] 1 mammary and 4 pulmonary tumors, 1 S.C. fibrosarcoma, 2 lymphocytic lesions.
[1138] 8 lymphocytic lesions.
[1139] 2 mammary and 3 pulmonary tumors, 1 hepatoma, 2 S.C. fibrosarcomas, 2 lymphocytic lesions.
[1140] 1 mammary and 1 pulmonary tumor, 3 hepatomas, 1 S.C. fibrosarcoma, 1 lymphocytic lesion.
[1141] Mammary tumors (107 adenocarcinomas, 1 adenoacanthoma).
[1142] Age: 1.25 yrs.
[1143] Prostatic squamous metaplasia. Adrenals, thyroids and pituitaries normal.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
325. 4,4'-DIHYDROXY-α, β-DIETHYLSTILBENE (Continued)								
Berg, O. Asbjörn, 1958	1 dog[1144]	Giant schnauzer	M	0.27 mg./kg./d. for 72 d	P.O	0[1143]		72 d.
Berg, O. Asbjörn, 1958	2 dogs[1145]	Arctic	M	0.22 & 1.19 mg./kg./d. for 36 d	P.O	0[1143]		36 d.
Berg, O. Asbjörn, 1958	1 dog[1146]	German shepherd.	M	0.15 mg./kg./d. for 236 d	P.O	0[1147]		239 d.
Kirkman, H., 1958	11 hamsters.[1148]	Syrian	M	20 mg. pellet implant	S.C	Tumors[1149, 1150]	Sacrificed at 200 d.	200 d.
Kirkman, H., 1958	5 hamsters	Syrian	M	Pellet plus ⅓ of kidney from newborn M hamsters.	S.C	Tumors[1151]	212 to 374 d	Up to 374 d.
Kirkman, H., 1958	6 hamsters	Syrian	M	Pellet plus ⅓ of kidney from newborn female hamsters.	S.C	Tumors[1152]	212 to 374 d	Up to 374 d.
Andervont, H. B., et al., 1958	41 mice[195, *]	BALB/c x DBA/2.	F	2.5% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1085]	Avg. age 23 mos	About 24 mos.
Andervont, H. B., et al., 1958	24 mice[198]	DBA/2 x I	M	20% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1086]	Avg. age 20 mos	22 mos.
Andervont, H. B., et al., 1958	15 mice	I x C3H	F	2.5% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1087]	Avg. age 20 mos	22 mos.
Andervont, H. B., et al., 1958	30 mice[198]	C57BL x C3H	M	20% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1088]	Avg. age 22 mos	22 mos.
Andervont, H. B., et al., 1958	21 mice[195]	C57BL x C3H	F	5% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1089]	Avg. age 23 mos	22 mos.
Andervont, H. B., et al., 1958	45 mice[198]	BALB/c x RIII	M	15% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1090]	Avg. age 20 mos	22 mos.
Andervont, H. B., et al., 1958	25 mice[195]	C3H	F	5% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1091]	Avg. age 23 mos	22 mos.
Andervont, H. B., et al., 1958	34 mice[195]	I	F	5% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1092]	Avg. age 15 mos	22 mos.
Andervont, H. B., et al., 1958	31 mice[195]	I	F	2.5% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1093]	Avg. age 15 mos	22 mos.
Andervont, H. B., et al., 1958	35 mice[198]	BALB/c x C57BL.	M	20% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1094]	Avg. age 21 mos	22 mos.
Andervont, H. B., et al., 1958	38 mice	BALB/c x C57BL.	M	20% in 5 mg. cholesterol pellet	S.C. r. axilla	0		At least 15 mos.
Andervont, H. B., et al., 1958	14 mice[195]	BALB/c x I	F	2.5% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1095]	Avg. age 20 mos	22 mos.
Andervont, H. B., et al., 1958	20 mice[195]	BALB/c x I	F	5% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1096]	Avg. age 20 mos	22 mos.

[195] Virgin.
[198] Castrated.
[1143] Prostatic squamous metaplasia. Adrenals, thyroids and pituitaries normal.
[1144] Age: 34 days.
[1145] Age: 36 days.
[1146] Age: 4.5 yrs.
[1147] Prostatic squamous metaplasia.
[1148] 4 subjected to deep puncture of right kidney with 16 gauge needle.
[1149] 1 with bilateral renal tumors, all with tumor cell foci associated with puncture scar.
[1150] 11 untreated controls negative.
[1151] 5 with primary renal tumors. 1 with tumor tissue in renal transplant, 1 with metastases.
[1152] 4 with primary renal tumors, 1 with tumor tissue in renal transplant.
[1085] 2 mammary and 5 pulmonary tumors, 1 uterine fibrosarcoma, 1 hepatoma, 1 lymphocytic lesion.
[1086] 1 mammary and 3 pulmonary tumors, 3 cortical carcinomas, 1 hepatoma, 9 lymphocytic lesions.
[1087] 1 pulmonary tumor, 3 lymphocytic lesions.
[1088] 2 pulmonary and 2 pituitary tumors, 3 hepatomas, 1 S.C. reticulum cell sarcoma, 2 lymphocytic lesions.
[1089] 1 hepatoma.
[1090] 5 mammary adenocarcinomas, 1 pulmonary tumor, 8 lymphocytic lesions.
[1091] 1 mammary and 2 pulmonary tumors, 3 hepatomas.
[1092] 1 pulmonary tumor, 1 hemangioendothelioma, 10 lymphocytic lesions.
[1093] 2 pulmonary tumors, 1 osteogenic sarcoma, 8 lymphocytic lesions.
[1094] 8 pulmonary tumors, 5 lymphocytic lesions.
[1095] 3 pulmonary tumors, 1 hepatoma, 5 lymphocytic lesions.
[1096] 2 pulmonary and 1 pituitary tumor.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
325. 4,4′-DIHYDROXY-α, β-DIETHYLSTILBENE (Continued)								
Andervont, H. B., et al., 1958	45 mice[198]	BALB/c x I	M	20% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1097]	Avg. age 19 mos	22 mos.
Andervont, H. B., et al., 1958	37 mice	BALB/c x I	M	20% in 5 mg. cholesterol pellet	S.C. r. axilla	0		At least 15 mos.
Andervont, H. B., et al., 1958	15 mice[198]	BALB/c x RIII	M	20% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1098]	Avg. age 19 mos	22 mos.
Andervont, H. B., et al., 1958	26 mice[195]	BALB/c	F	2.5% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1099]	Avg. age 21 mos	22 mos.
Andervont, H. B., et al., 1958	27 mice[195]	BALB/c	F	5% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1100]	Avg. age 21 mos	22 mos.
Andervont, H. B., et al., 1958	27 mice[198]	BALB/c	M	20% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1101]	Avg. age 16 mos	22 mos.
Andervont, H. B., et al., 1958	67 mice	BALB/c	M	20% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1102]		At least 7 mos.
Andervont, H. B., et al., 1958	14 mice[195]	C57BL x C3H	F	2.5% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1103]	Avg. age 23 mos	22 mos.
Andervont, H. B., et al., 1958	52 mice[198]	BALB/c x C3H F_1[1104].	M	10% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1105]	Avg. age 23 mos	At least 21 mos.
Andervont, H. B., et al., 1958	27 mice	BALB/c x C3H	M	20% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1106]	Avg. age 12 mos	15–16 mos.
Andervont, H. B., et al., 1958	97 mice[198]	BALB/c x C3H	M	20% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1107]	Avg. age 19 mos	22 mos.
Andervont, H. B., et al., 1958	45 mice[198]	DBA/2 x C3H	M	20% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1108]	Avg. age 21 mos	22 mos.
Andervont, H. B., et al., 1958	97 mice[195]	BALB/c x C3H	F	2.5% or 5% in 5 mg. cholesterol pellet.	S.C. r. axilla	Tumors[1109]	Avg. age 23.5 mos	22 mos.
Andervont, H. B., et al., 1958	41 mice[195]	C3H	F	10% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1110]	Avg. age 24 mos	At least 20 mos.
Andervont, H. B., et al., 1958	37 mice[195]	C3H	F	20% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1111]	Avg. age 22 mos	At least 18 mos.
Andervont, H. B., et al., 1958	184 mice[198]	BALB/c x C3H F_1[1104].	M	10% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1112]	Avg. age 23 mos	At least 21 mos.
Andervont, H. B., et al., 1958	37 mice	BALB/c x RIII	M	20% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1113]	Avg. age 12 mos	15–16 mos.
Andervont, H. B., et al., 1958	44 mice[195]	BALB/c x RIII	F	2.5% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1114]	Avg. age 23 mos	22 mos.
Andervont, H. B., et al., 1958	22 mice[195]	DBA/2	F	5% in 5 mg. cholesterol pellet	S.C. r. axilla	Tumors[1115]	Avg. age 21 mos	22 mos.

[195] Virgin.
[198] Castrated.
[1097] 5 pulmonary tumors, 3 cortical carcinomas, 1 hemangioendothelioma.
[1098] 1 pulmonary and 1 pituitary tumor, 1 hepatoma, 3 lymphocytic lesions.
[1099] 4 pulmonary tumors, 1 cortical carcinoma, 1 sarcoma, 1 hemangioendothelioma.
[1100] 8 pulmonary tumors, 3 cortical carcinomas, 1 sarcoma, 1 heman ioendothelioma.
[1101] 3 pulmonary tumors, 1 cortical carcinoma, 12 lymphocytic lesions.
[1102] 51 with testicular tumors.
[1103] 1 pulmonary tumor, 2 hepatomas, 1 cortical carcinoma.
[1104] C3H males carrying mammary tumor agent.
[1105] 40 with mammary tumors.
[1106] 10 with mammary tumors (8 adenocarcinomas); 10 with testicular tumors.
[1107] 57 mammary adenocarcinomas, 6 pulmonary and 1 pituitary tumor, 2 cortical carcinomas, 2 S.C. fibrosarcomas, 1 hepatoma, 1 hemangioendothelioma.
[1108] 7 mammary adenocarcinomas, 3 pulmonary tumors, 5 hepatomas, 2 S.C. fibrosarcomas, 2 cortical carcinomas.
[1109] Mammary tumors (11 adenocarcinomas, 1 adenoacanthoma, 3 unspecified). 17 pulmonary tumors, 1 hepatoma, 1 glioblastoma multiforme, 6 lymphocytic lesions.
[1110] 5 mammary adenocarcinomas.
[1111] Mammary tumors: (6 adenocarcinomas, 1 carcinosarcoma).
[1112] 117 with mammary tumors.
[1113] 2 mammary tumors.
[1114] 1 mammary and 4 pulmonary tumors, 1 hepatoma, 5 lymphocytic lesions.
[1115] 2 pulmonary tumors, 1 uterine fibrosarcoma, 1 hepatic reticulum cell sarcoma, 4 lymphocytic lesions.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
325. 4,4′-DIHYDROXY-α, β-DIETHYLSTILBENE (Continued)								
Andervont, H. B., et al., 1958	8 mice[198]	DBA/2	M	10% in 5 mg. cholesterol pellet	S.C. r. axilla	0[1115]	Avg. age 21 mos	22 mos.
Andervont, H. B., et al., 1958	50 mice	DBA/2	M	10 or 20% in 5 mg. cholesterol pellet	S.C. r. axilla	0	Avg. age 14 mos	At least 8 mos.
Andervont, H. B., et al., 1958	30 mice[198]	DBA/2	M	20% in 5 mg. cholesterol pellet	S.C. r. axilla	0[1117]	Avg. age 19 mos	22 mos.
Trentin, J. J., and Gardner, W. U., 1958.	51 mice[1153]	Hybrid (C3HXA)F_1.	M	25% in 7 mg. cholesterol pellet	S.C. implant	Tumors[1154]	49 at 200 d	Over 600 d.
Trentin, J. J., and Gardner, W. U., 1958.	45 mice[1155]	Hybrid (C3HXA)F_1.	M	25% in 7 mg. cholesterol pellet	S.C. implant	Tumors[1156]	42 at 200 d	Over 600 d.
Trentin, J. J., and Gardner, W. U., 1958	14 mice	A	M	25% in 7 mg. cholesterol pellet	S.C. implant	Tumors[1157]	12 at 200 d	Over 300 d.
Trentin, J. J., and Gardner, W. U., 1958.	16 mice	C3H	M	25% in 7 mg. cholesterol pellet	S.C. implant	0	16 at 200 d	Over 500 d.
Trentin, J. J., and Gardner, W. U., 1958	15 mice	Hybrid (C3HXA)F_1.	M	25% in 7 mg. cholesterol pellet	S.C. implant	Tumors[1158]	15 at 200 d	Over 500 d
Trentin, J. J., and Gardner, W. U., 1958.	14 mice[1159]	A	M	25% in 7 mg. cholesterol pellet	S.C. implant	Tumors[1150]	9 at 200 d	Over 300 d.
Trentin, J. J., and Gardner, W. U., 1958.	12 mice[1159]	C3H	M	25% in 7 mg. cholesterol pellet	S.C. implant	Tumors[1151]	12 at 200 d	Over 600 d.
Trentin, J. J., and Gardner, W. U., 1958.	15 mice[1159]	Hybrid (C3HXA)F_1.	M	25% in 7 mg. cholesterol pellet	S.C. implant	Tumors[1162]	14 at 200 d	Over 500 d.
Gardner, W. U., 1959	40 mice[1153]	BC	F	7 mg. pellet, 1 part to 3 parts cholesterol & dipped in 1% collodion, for avg. 263 d.	Intravaginal insert.	Tumors[1164, 1155].	Mean age 605 d	Up to 681 d.
Huseby, R. A., 1959	24 mice[1155]	Bittner A	M	0.2 μg/gm. in semisynthetic diet	P.O	Tumors[1157]		At least 7 mos.
Huseby, R. A., 1959	Mice[198]	Bittner A	M	0.2 μg./gm. in semisynthetic diet	P.O	Tumors[1158]		At least 14 mos.
Kirkman, H., 1959	7 hamsters[1169].	Syrian	M	0.6 mg. in sesame oil or saline susp. every 2nd d., 361–380 d.,	Subpannicular inj.	Tumors[1170, 1171].		At least 380 d.

[198] Castrated.
[1115] 1 lymphocytic lesion.
[1117] 2 lymphocytic lesions.
[1153] Castrated and given testis transplant from strain C3H mice, 2 weeks prior to treatment.
[1154] 1 (2%) testicular tumor of isograft.
[1155] Castrated and given testis transplant from strain A mice, 2 weeks prior to treatment.
[1156] 26 (62%) with testicular tumors of isograft, 3 with peritoneal metastases.
[1157] 5 (42%) with testicular tumors.
[1158] 7 (47%) with testicular tumors.
[1159] Castrated and given testis transplant from same genotype, 2 wks. prior to treatment.
[1150] 3 (33%) with testicular tumors of isograft.
[1151] 1 (8%) with testicular tumor of isograft.
[1152] 4 (29%) with testicular tumors of isograft.
[1153] Begun at age 341 days (avg.).
[1154] 8 with cervico-vaginal epidermoid carcinoma, 12 with utero-vaginal lesions, 2 with pituitary chromophobe adenomas.
[1155] 12 collodion treated controls negative. Of 30 cholesterol treated controls, 1 perineal papilloma and 1 vulval epidermoid carcinoma.
[1166] 5 pituitaries isografted S.C. at age 5 wks. Half were castrated.
[1167] 100% with mammary adenocarcinoma, age 7.9 mos. (avg.).
[1168] 31% with mammary adenocarcinoma, age 15.6 mos. (avg.).
[1159] Castrated at age 59 days (approx.).
[1170] 100% with malignant renal tumors.
[1171] 60 untreated castrated controls negative.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
325. 4,4′-DIHYDROXY-α, β-DIETHYLSTILBENE (Continued)								
Kirkman, H., 1959	49 hamsters	Syrian	F	10 given 0.6 mg. in sesame oil or saline susp. every 2nd d., 39 given 20 mg. pellets,duration of 250–487 d.	Subpannicular inj. or implant.	Tumors[1172, 1173].		At least 487 d.
Kirkman, H., 1959	15 hamsters[1174].	Syrian	M	20 mg. pellets every 150 d., 248–497 d.	Subpannicular implant.	Tumors[1171, 1175].		At least 497 d.
Kirkman, H., 1959	1 hamster	Syrian	M	20 mg. pellet for 352 d., reimplanted in 100 d. for 103 additional d.	Subpannicular implant.	Tumors[1176]		565 d.
Kirkman, H., 1959	4 hamsters[1177]	Syrian	F	20 mg. pellet	Subpannicular implant.	Tumors[1178]		232 d.
Kirkman, H., 1959	5 hamsters[1179]	Syrian	F	20 mg. pellet	Subpannicular implant.	Tumors[1178]		400 d.
Kirkman, H., 1959	8 hamsters[1180]	Syrian	F	20 mg. pellet	Subpannicular implant.	Tumors[1181]		426 d.
Kirkman, H., 1959	5 hamsters[1182]	Syrian	M	20 mg. pellets	Subpannicular implant.	Tumors[1183]	213, 331, 350, 352 & 374 d., respectively.	Up to 374 d.
Kirkman, H., 1959	6 hamsters[1184]	Syrian	M	20 mg. pellets	Subpannicular implant.	Tumors[1185]	212, 212, 288, 289, 294 & 318 d., respectively.	Up to 318 d
Kirkman, H., 1959	4 hamsters[1186]	Syrian	M	20 mg. pellets, simultaneous treatment with 20 mg. pellets of cortisone.	Subpannicular implants.	Tumors[1178]		158 d.
Kirkman, H., 1959	245 hamsters.	Syrian	M	0.6 mg. in sesame oil or saline susp. every 2nd d., followed in some cases by 20 mg. pellets, or only pellets given for 136–659 d.	Subpannicular inj. or implant.	Tumors[1187 1188].		At least 659 d.
Kirkman, H., 1959	15 hamsters.[1189]	Syrian	F	20 mg. pellet for avg. 159–205 d	Subpannicular implant.	Tumors[1190]		Up to 246 d.
Kirkman, H., 1959	1 hamster[1191]	Syrian	F	20 mg. pellet for 367 d	Subpannicular implant	Tumors[1192]	367 d	367 d.
Kirkman, H., 1959	17 hamsters.[1191]	Syrian	M	20 mg. pellet up to 250th d	Subpannicular implant.	Tumors[1193]	Killed at 365–554 d.	Up to 554 d.

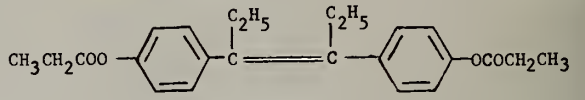
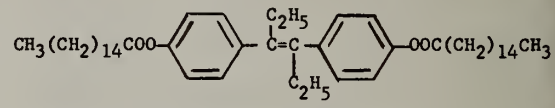
[1171] 60 untreated castrated controls negative.
[1172] 1 pellet treated with bilateral renal tumors.
[1173] 84 untreated controls negative.
[1174] Castrated at age 5 days (approx.).
[1175] 100% with malignant renal tumors (2 with metastases).
[1176] Renal tumors, some after regression period.
[1177] Age 1–2 da.
[1178] 3 malignant renal tumors.
[1179] Age 10 da.
[1180] Age 18 da.
[1181] 4 malignant renal tumors.
[1182] Subpannicular renal transplants from newborn males.
[1183] 4 with malignant transplant renal tumors. 5 with malignant primary renal tumors (1 with metastases).
[1184] Subpannicular renal transplants from newborn females.
[1185] 2 with malignant transplant renal tumors. 4 with malignant primary renal tumors.
[1186] Adrenalectomized on day 2 of treatment.
[1187] 177 malignant renal tumors (50 with metastases).
[1188] 61 untreated controls were negative.
[1189] Ovariectomized.
[1190] 6 with malignant renal tumors.
[1191] Castrated.
[1192] Malignant renal tumor, regression at necropsy.
[1193] No laparotomy at 250 days, 100% with evidence of renal tumor regression at necropsy.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
325. 4,4′-DIHYDROXY-α,β-DIETHYLSTILBENE (Continued)								
Kirkman, H., 1959	3 hamsters	Syrian	M	20 mg. pellet up to 253rd d	Subpannicular implant.	Tumors[1194]	Killed at 372–409 d.	Up to 409 d.
Kirkman, H., 1959	7 hamsters[1189]	Syrian	F	20 mg. pellet once	Subpannicular implant	Tumors[1195, 1196]		246 d.
Kirkman, H., 1959	5 hamsters[1189]	Syrian	F	0.6 mg. in sesame oil or saline susp. every 2nd d. plus (1) 20 mg. pellet.	Subpannicular inj. & implant.	Tumors[1196, 1197]		At least 410 d.
Kirkman, H., 1959	4 hamsters[1189]	Syrian	F	20 mg. pellet once plus implant of one ovary in spleen.	Subpannicular implant.	Tumors[1198 1199]		At least 224 d.
Kirkman, H., 1959	9 hamsters[1189]	Syrian	F	(5) 20 mg. pellets	Subpannicular implant.	Tumors[1196, 1200]		At least 277 d.
Kirkman, H., 1959	2 hamsters	Syrian	M	20 mg. pellet for 252 d., reimplanted in 200 d. for 57 & 103 additional d., respectively.	Subpannicular implant.	Tumors[1201]		565 d.
Kirkman, H., 1959	12 hamsters	Syrian	M	20 mg. pellets for avg. 228 d	Subpannicular implant.	Tumors[1202]		Up to 260 d.
Kirkman, H., 1959	([1203])			20 mg. pellets for 231 d	Subpannicular implant.	Tumors[1204]		231 d.
Kirkman, H., 1959	22 hamsters	Syrian	M	20 mg. stilbestrol: cholesterol (1:4) pellet, up to 502 d.	Subpannicular implant.	0		Up to 502 d.
Kirkman, H., 1959	28 hamsters	Syrian	M	20 mg. pellet for avg. 169–273 d	Subpannicular implant.	Tumors[1205]		Up to 330 d.
Ferguson, D. J., 1956	9–20 mice	C3H	F	0.08 μg. in oil once a d. (total vol. of 0.03 ml/d.) 30–38 d. after operation, cont. up to 315 d.	S.C	0	All sacrificed	At least 315 d.
Ising, U., 1956	6 hamsters	Golden	F	25–30 mg. pellets implanted once or twice.	S.C. back	0		At least 200 d.
	8 hamsters	Golden	M	25–30 mg. pellets implanted once	S.C. back	Tumors[4447]	All sacrificed at 200 d.	200 d.
	14 hamsters	Golden	M	25–30 mg. pellets implanted once or twice.	S.C. back	Tumors[4448]		About 280 d.
	12 hamsters[4449]	Golden	M	25–30 mg. pellets implanted once or twice.	S.C. back	Tumors[4450]	2 died at 280 d., rest killed.	280 d.
Segal, S. J., & Thompson, C. R., 1956.	16 rats	Sprague-Dawley.	M	60 μg./0.2 cc. olive oil for 30 d	S.C	0	All sacrificed	30 d.

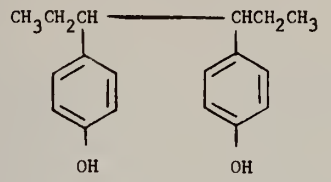
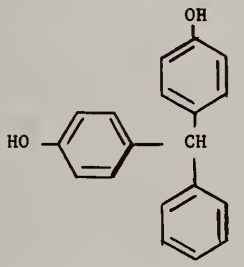
[1189] Ovariectomized.
[1194] 3 malignant renal tumors at 253 days, tumor regression at necropsy.
[1195] 5 with malignant renal tumors.
[1196] 12 untreated ovariectomized controls negative.
[1197] 100% with malignant renal tumors.
[1198] 2 with malignant renal tumors.
[1199] 12 untreated ovariectomized controls negative.
[1200] 5 with malignant renal tumors (1 with metastases).
[1201] 2 with renal tumors, some after regression periods.
[1202] 7 with malignant right renal tumors (1 with left renal tumor with metastasis). 5 with malignant left renal tumors.
[1203] Unilateral nephrectomy.
[1204] 7 with malignant renal tumors.
[1205] 14 with malignant renal tumors (4 with metastases).
[4447] 5 with renal tumors.
[4448] 12 with multiple renal tumors (5 with abdominal metastases).
[4449] Right uretherectomy.
[4450] 100% with multiple renal tumors (9 with abdominal metastases).

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
325. 4,4′-DIHYDROXY-α,β-DIETHYLSTILBENE (Continued)								
	16 rats	Sprague-Dawley.	M	30 μg./0.1 cc. olive oil for 30 d	S.C	0	All sacrificed	30 d.
Franks, L. M., and Chesterman, F. C., 1957.	18 hamsters	Golden	10 M, 8 F	15 mg. pellet every 3 mos. or longer up to 12 mos.	Implant	Tumors[4451]		12 mos.
Kirkman, H., 1959	8 hamsters	Syrian	M	(5) 20 mg. stilbestrol:cholesterol (1:4) pellets up to 424 d.	Subpannicular implant.	Tumors[1206]		Up to 424 d.
Kirkman, H., 1959	10 hamsters	Syrian	M	20 mg. pellet plus 1 stilbestrol: cholesterol (1:4) pellets.	Subpannicular implant.	Tumors[1207]		Up to 522 d.
Kirkman, H., 1959	9 hamsters[1189]	Syrian	F	(5) 20 mg. pellets for avg. 158–277 d.	Subpannicular implant.	Tumors[1181]		Up to 277 d.
Pol'kina, R. I., 1959	24 hamsters	Golden	15 M, 9 F	20 mg. in tablet containing 10 mg. paraffin wax and 10 mg. lanolin once a mo., total dose of 80–280 mg.	S.C. implant	Tumors[4452]	194–463 d	463 d.
Andervont, H. B., et al., 1960	94 mice	BALB/c	M	10% in 5 mg. pellets with cholesterol.[1208]	S.C. r. axilla	Tumors[1209]	66 at 16 mos	16 mos.
Andervont, H. B., et al., 1960	101 mice	BALB/c	M	20% in 5 mg. pellets with cholesterol.[1208]	S.C. r. axilla	Tumors[1210]	73 at 16 mos	16 mos.
Andervont, H. B., et al., 1960	394 mice	BALB/c	M	20% in 5 mg. pellets with cholesterol.[1211]	S.C. r. axilla	Tumors[1212]	323 at 17 mos	17 mos.
Angrist, A., et al., 1960	30 rats	Sprague-Dawley.		0.5 mg. pellets,[1213] fed Vit. A deficient diet.	S.C	0[1214]		8 wks.
Greisbach, W. E., and Purves, H. D., 1960.	26 rats	Wistar	F	0.5% in 10 mg. cholesterol pellet	Implant	Tumors[1215]		Up to 16 mos.
Griesbach, W. E., and Purves, H. D., 1960.	24 rats[1216]	Wistar	12 F & 12 M	0.5% in 10 mg. cholesterol pellet	Implant	Tumors[1217]		Up to 18 mos.
Greisbach, W. E., and Purves, H. D., 1960.	24 rats[1216]	Wistar	12 F & 12 M	2.5% in 10 mg. cholesterol pellet	Implant	Tumors[1217]		Up to 18 mos.
Greisbach, W. E., and Purves, H. D., 1960.	30 rats	Wistar	F	2.5% in 10 mg. cholesterol pellet	Implant	Tumors[1218]		Up to 17 mos.
McGregor, R. F., et al., 1960	18 hamsters	Golden	M	20.0–27.0 mg. pellet, 8–12 wks. later given another pellet.	S.C. implant	Tumors[1219]	Sacrificed at 10–12 mos.	Up to 12 mos.
McGregor, R. F., et al., 1960	12 hamsters	Golden	M	20.0–27.0 mg. pellet, 8–12 wks. later given another pellet.	S.C. implant	Tumors[1220]	All sacrificed at 8 mos.	8 mos.

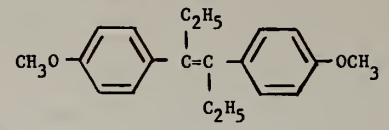
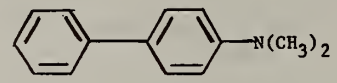
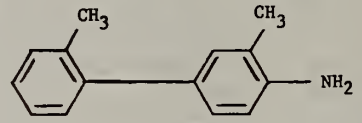
[1181] 4 malignant renal tumors.
[1189] Ovariectomized.
[1206] 3 with malignant renal tumors (1 with metastases).
[1207] 9 with malignant renal tumors (6 with metastases).
[4451] 2 males with cortical tumors. Other pathology to be reported later. Untreated controls with adrenal nodular hyperplasia.
[4452] 9 males with renal tumors (adenomas, papillary cystadenomas or adenocarcinomas). Dosage 180 mg. and higher.
[1208] Pellets removed after testes reached 9–10 mm. length.
[1209] 67 with testicular tumors (3 bilateral), at 7.4 mos. (avg.)
[1210] 73 with testicular tumors (9 bilateral), at 6.4 mos. (avg.).
[1211] Pellets removed 2 wks. after testes reached 9–10 mm. length.
[1212] 323 with testicular tumors (65 bilateral), at 6.7 mos. (avg.).
[1213] Paraffin pellet bladder implant.
[1214] 24 with urinary cystic metaplasia.
[1215] 4 with hypophyseal adenoma after 10 mos.
[1216] Castrated at age 6 wks.
[1217] 21 with 46 hypophyseal adenomas. 28/29 untreated castrates with 98 hypophyseal adenomas.
[1218] 14 with adenomas.
[1219] 10/18 with renal tumors.
[1220] 9/12 with renal tumors.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
325. 4,4′-DIHYDROXY-α,β-DIETHYLSTILBENE (Continued)								
McGregor, R. F., et al., 1960	17 hamsters	Golden	M	20.0–27.0 mg. pellet, 8–12 wks. later given another pellet.	S.C. implant	0	All sacrificed at 3 mos.	3 mos.
McGregor, R. F., et al., 1960	15 hamsters	Golden	M	20.0–27.0 mg. pellet, 2nd pellet given 8–12 wks. later, 3rd pellet given at 8 mos.	S.C. implant	Tumors[1221]	All sacrificed at 10–12 mos.	Up to 12 mos.
326. 4,4′-DIHYDROXY-α, β-DIETHYSTILBENE DIPROPIONATE 								
Marchant, J., 1957	Mice	CIF[1222]	F	0.2% in olive oil for 11.5 mos	Skin	0[1223]	9 at 4 mos	11.5 mos. mean.
Dow, C., 1958	5 cats[1224]	Domestic	4 F & 1 M	1 mg. dissolved in arachis oil given daily up to 41 d.	I.M	0[1225]	46, 49, 58, 63, & 68 d. respectively.	68 d.
Dow, C., 1958	5 cats[1224]	Domestic	4 F & 1 M	2.5 mg. dissolved in arachis oil given daily up to 41 d.	I.M	0[1226]	24, 30, 34, 37, & 41 d. respectively.	41d.
Dow, C., 1959	4 dogs[1227]		F	5 mg. in oil daily	I.M	0	33–38 d	38 d.
Dow, C., 1959	2 dogs[1227]		F	0.5 mg. in oil daily for 400 d.[1228]	I.M	0		400 d.
Dow, C., 1959	4 dogs[4453]		F	1 mg. in oil daily[4454]	I.M	0		400 d.
Dow, C., 1960	8 dogs	Collies	2 M & 6 F	1 mg. daily up to 400 d	I.M	0[1229]	2 F & 2 M killed after 100 d., 2 after 200 d. & 2 after 400 d.	400 d.
327. 4,4′-DIHYDROXY-α, β-DIETHYLSTILBENE PALMITATE 								
Meissner, W. A., et al., 1957	7 rabbits	Albino or brown	F	5 mg./cc. in peanut oil approx. once in 3 wks. for 15 times, total dose 75 mg.	I.M. back or thigh.	Tumors[1230, 1231]		At least 389 d.

[1221] 100% with renal tumors.
[1222] Probably IF x C57 B1.
[1223] 1 ovarian cyst.
[1224] 3 females castrated.
[1225] Hepatic, myocardial, thyroid, adrenal, and salivary gland lesions.
[1226] Necrotized intrahepatic bile ducts, pancreatic, myocardial, adrenal, thyroid and salivary gland lesions.
[1227] Castrated.
[1228] Hysterectomy on 120th and 400th day.
[1229] Atrophy of all integumental structures and dermal fibrosis.
[1230] 1 with uterine adenocarcinoma and mixed granulosa-theca cell tumor. 1 with undifferentiated uterine carcinoma with metastasis and a luteoma.
[1231] 10 untreated controls negative.
[4453] Bilateral ovariectomy.
[4454] Hysterectomy at 120 and 400 days.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
328. γ,δ-DI-(p-HYDROXYPHENYL)-HEXANE[4455] 								
Zhuravleva, T. B., 1957	180 rats[1232]	White	F	0.1 ml. of 2% soln. in peach oil (2,000 λ) every other d. from 1–220 d.	S.C	Tumors[1233]	Sacrificed at end of experiment.	220 d.
Zhuravleva, T. B., 1957	20 rats[1232]	White	F	0.1 ml. of 2% soln. in peach oil (2,000 λ) at varying intervals.	S.C	Tumors[1234]	Sacrificed at end of experiment.	220 d.
Konoplev, V. P., 1959	52 rats			20–60 mg. cylindrical pellets once a mo. for 7 mos., total dose to 420 mg.	S.C. implant	Tumors[1235, 1236]	Up to 14 mos	14 mos.
Podilchak, M. D., 1959	55 guinea pigs.		M	0.3 ml. of 0.1% soln. in oil twice wkly. for 6 mos., 0.5 ml. of 0.1% soln. in oil once wkly. thereafter.	I.M	Tumors[4456, 4457]	Killed at various intervals.	Up to 16 mos.
Vadova, A. V., and Smoilovskaia, E. E., 1959.	1 monkey[1237]	Rhesus	F	Total 303 mg. as oily soln		0[1238]	Died after 2 yrs. 3 mos.	2 yrs. 3 mos.
Vadova, A. V., and Smoilovskaia, E. I., 1959.	1 baboon[1239]	Arabian	F	Total 100 mg. as oily soln		0[1240]	Died from pneumonia.	1 yr.
329. 4,4′-DIHYDROXYTRIPHENYLMETHANE 								
Schmidt, L., 1955	6 rats			120 mg./kg. daily in food	P.O		100%	3 mos.

[1232] Castrated 1 month prior to treatment.
[1233] 5 with mammary carcinoma.
[1234] 8 with mammary carcinoma.
[1235] 3 hepatomas (at 5 mos.). 1 hypophyseal adenoma.
[1236] 15 untreated controls negative at 14 mos.
[1237] Age: 13 yrs.
[1238] Mammary and uterine gland atrophy, adrenal and thyroid adenomatosis.
[1239] Age 1.75 yrs.
[1240] Mammary duct proliferation.
[4455] Hexestrol.
[4456] 3 with prostatic fibromyoma at 15–16 months.
[4457] 5 peach oil controls negative.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
330. 4,4′-DIMETHOXY-α, α′-DIETHYLSTILBENE 								
Gyarmati, E., 1953	36 rats	Albino	F	Three injs. respectively of 2.5—5–10 mg., 2 wks. apart.[1241]	I.P	0[1242]		16 wks.
331. 4-DIMETHYLAMINOBIPHENYL 								
Miller et al., 1956	8 rats	Albino	M	1.62 mM/kg. diet	P.O	1 small intestine tumor.	8 at 8 mos	10 mos.
Miller et al., 1956	9 rats	Albino	F	1.62 mM/kg. diet	P.O	8 mammary gland tumors.	8 at 8 mos	10 mos
Miller et al., 1956	13 rats	Albino	M	5.32 mM/kg. diet	P.O	Tumors[1243]	11 at 8 mos	10 mos.
332. 3,2′-DIMETHYL-4-AMINODIPHENYL 								
Walpole, A. L., et al., 1954	11 rats	Wistar	M	3.5 g./kg. total dose	S.C	Tumors[1244]		Up to 300 d.
Walpole, A. L., et al., 1954	12 rats	Wistar	M	2.8 g./kg. total dose	S.C	Tumors[1245]		Up to 300 d.
Walpole, A. L., et al., 1954	12 rats	Wistar	F	1.5 g./kg. total dose	S.C	Tumors[1246]		Up to 300 d.
Walpole, A. L., et al., 1954	11 rats	Wistar	M	4.0 g./kg. total dose	S.C	Tumors[1247]		Up to 300 d.
Walpole, A. L., et al., 1954	11 rats	Wistar	M	2.9 g./kg. total dose	S.C	Tumors[1248]		Up to 300 d.
Walpole, A. L., et al., 1954	12 rats	Wistar	M	1.2 g./kg. total dose	S.C	Tumors[1249]		Up to 300 d.
Walpole, A. L., et al., 1954	12 rats	Slonaker	F	2.3 g./kg. total dose	S.C	Tumors[1250]	1 died early	More than 300 d.

[1241] Three different diets.

[1242] Ovarian cyst.

[1243] 1 mammary gland tumor, 4 otic tumors, 2 enteric tumors, 1 death due to lymphoblastic leukemia at 7 mos., 1 S.C. angioendothelioma with metastases to skull at 10 mos.

[1244] 9 enteric, 1 bladder, 1 salivary gland arachis oil S.C. controls developed tumors; reported elsewhere.

[1245] 12 enteric, 4 acoustic gland, 1 mammary, 4 salivary gland, arachis oil S.C. controls developed tumors; reported elsewhere.

[1246] 6 enteric, 2 acoustic gland, 2 mammary, 3 leukemias, 1 bladder, 1 salivary gland. Arachis oil S.C. controls developed tumors; reported elsewhere.

[1247] 11 enteric, 3 acoustic gland, 1 leukemia, 1 bladder, 2 salivary gland. Arachis oil S.C. controls developed tumors; reported elsewhere.

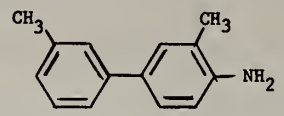
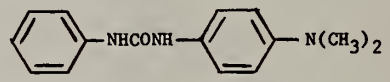
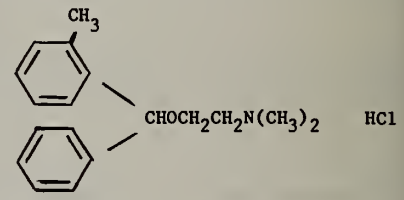
[1248] 9 enteric, 6 acoustic gland. Arachis oil S.C. controls developed tumors; reported elsewhere.

[1249] 5 enteric, 1 acoustic gland. Arachis oil S.C. controls developed tumors; reported elsewhere.

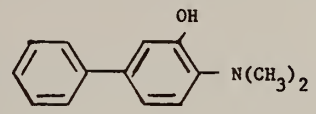
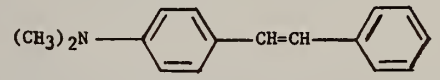
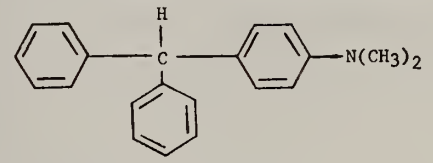
[1250] 2 enteric, 6 bladder, 6 acoustic gland. Arachis oil S.C. controls developed tumors; reported elsewhere.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
332. 3,2′-DIMETHYL-4-AMINODIPHENYL (Continued)								
Walpole, A. L., et al., 1954	12 rats	Slonaker	M	2.3 g./kg. total dose	S.C	Tumors[1251]	2 died early	More than 300 d.
Walpole, A. L., et al., 1955	12 rats	Wistar	M	Dissolved in arachis oil, daily for about 220 d., mean total dosage: 174 mg./100 g. of body wt.	S.C., r. & l. pectoral regions respectively on alternate d.	0	Mean survival time: 279 d.[1252]	Approx. 279 d.
Walpole et al., 1955	12 rats	Wistar	M	Dissolved in arachis oil, daily for about 124 d., total dose 328 mg./100 g. of body wt.	S.C., r. & l. pectoral regions respectively on alt. d.	1[1253]	Mean survival time: 170 d.[1252]	Approx. 170 d.
Walpole et al., 1955	12 rats	Wistar	M	Compound mixed with powdered food pellets in diet, mean total dosage: (Approx.) 430 mg./g. body wt.	P.O	1[1254]	Mean survival time: 275 d.[1252]	Approx. 275 d.
Walpole et al., 1955	12 rats	Wistar	M	Dissolved in arachis oil, daily for about 141 d., mean total dose: 276 mg./100 g. of body wt.	S.C., r. & l. pectoral regions respectively on alt. d.	0[1255]	Mean survival time: 183 d.[1252]	Approx. 183 d.
Walpole, et al., 1955	12 rats	Wistar	F	Dissolved in arachis oil, daily for about 119 d., mean total dosage: 133 mg./100 g. of body wt.	S.C., r. & l. pectoral regions respectively on alt. d.	0[1256]	Mean survival time: 197 d.[1252]	Approx. 197 d.
Walpole, et al., 1955	12 rats	Slonaker	M	Dissolved in arachis oil, daily for about 249 d., mean total dosage: 230 mg./100 g. of body wt.	S.C. r. & l. pectoral regions respectively on alt. d.	8[1257] (bladder tumors).	Mean survival time: 270 d.[1252]	Approx. 270 d.
Walpole et al., 1955	12 rats	Slonaker	M	Dissolved in arachis oil, daily for about 249 d., mean total dosage, 230 mg./100 g. of body wt.	S.C. r. & l. pectoral regions respectively on alt. d.	8[1257] (bladder tumors).	Mean survival time: 270 d.[1252]	Approx. 270 d.
Walpole et al., 1955	12 rats	Slonaker	F	Dissolved in arachis oil, daily for about 233 d., mean total dosage: 235 mg./100 g. of body wt.	S.C. r. & l. pectoral regions respectively on alt. d.	4[1258] (bladder tumors).	Mean survival time: 247 d.[1252]	Approx. 247 d.
King, E. S. J., & Varasdi, G., 1959.	18 rats[1259]	Wistar	9 āā	0.5 ml./100 g. body wt. of 4 g. dissolved in 100 ml. arachis oil, total 240–500 mg.	S.C	Tumors[1260, 1261].	145–351 d	351 d.

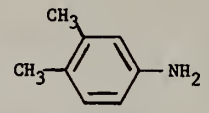
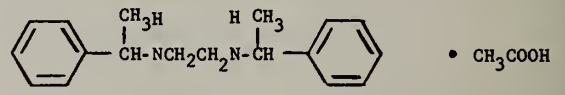
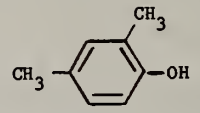
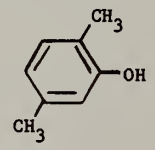
[1251] 4 enteric, 7 bladder, 9 acoustic gland. Arachis oil S.C. controls developed tumors; reported elsewhere.
[1252] Sacrificed when ill, moribund, or rapidly losing weight.
[1253] Urinary cystic papilloma, 3 with T. crassicauda infection. 2 epithelial hyperplasia.
[1254] Urinary cystic papilloma, 2 with T. crassicauda infection.
[1255] 2 with T. crassicauda infection.
[1256] 1 with epithelial hyperplasia. 2 with proliferations and plaques. 2 found with T. crassicauda infection.
[1257] 6 with T. crassicauda infection.
[1258] 1 with T. crassicauda infection. 3 with epithelial hyperplasia. 2 with proliferation and plaques.
[1259] Age: 6 mos.
[1260] 7 with colonic carcinoma, 5 with rectal carcinoma at 271, 273, 274, 287, and 351 days. All adenocarcinomatous. 1 rhabdomyoma at 145 days.
[1261] Arachis oil controls negative up to 600 days.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
				333. 3,3′-DIMETHYL-4-AMINODIPHENYL 				
King, E. S. J., & Varasdi, G., 1959.	24 rats[390]	Wistar	12 F & M	0.5 ml./100 g. body wt. of 4 g. dissolved in 100 ml. arachis oil, total 240–250 mg./rat.	S.C.	Tumors[1261, 1262].	145–351 d	351 d
				334. 4-DIMETHYLAMINO-N,N′-DIPHENYLUREA 				
Walpole, A. L., et al., 1954	12 rats	Albino	6 āā	Total of 1,000 mg./100 g. in total of 5.0 ml./100 g. arachis oil[336] twice wkly. for 14 dosing d.	S.C. r. flank	Tumors[1263, 1264].	7 died from 512–703 d.	703 d.
				335. β-DIMETHYLAMINOETHYL-2-METHYLBENZHYDRYL ETHER HYDROCHLORIDE[1266] 				
Bijisma et al., 1956	10 mice (18 g.)			7.5 mg. pK daily in food	P.O.	No gross path.	10	84 d.
Bijisma et al., 1956	10 mice (18 g.)			15 mg. pK. daily in food	P.O.	No gross path.	10	84 d.
Bijisma et al., 1956	10 mice (18 g.)			30 mg. pK. daily in food	P.O.	No gross path.	9	84 d.
Bijisma et al., 1956	10 mice (18 g.)			60 mg. pK. daily in food	P.O.	No gross path.	5	84 d.
Bijisma et al., 1956	10 rats (90 g.)		M	7.5 mg. daily in food	P.O.	No gross path.	8 wks	8 wks.
Bijisma et al., 1956	10 rats (90 g.)		M	15 mg. daily in food	P.O.	No gross path.	10	8 wks
Bijisma et al., 1956	10 rats (90 g.)		M	30 mg. daily in food	P.O.	No gross path.	8 at 4 wks	8 wks.

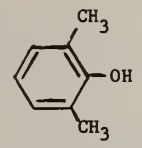
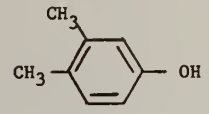
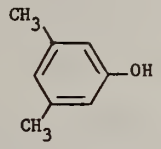
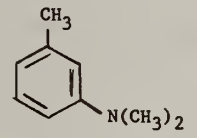
[336] Sterilized (140° C. for 1 hour).
[390] Age at beginning: 3½ months.
[1261] Arachis oil controls negative up to 600 days.
[1262] 5 salivary gland tumors, 1 hepatic sarcoma, 1 mammary carcinoma at 272 days, 1 malignant uterine tumor, 1 with gastric carcinoma, 3 with enteric carcinoma, 2 with colonic carcinoma. All adenocarcinomatous.
[1263] 2 with injection site sarcoma, 1 uterine carcinoma, 1 carcinoma and 1 pituitary tumor in males.
[1264] 3/24 arachis oil controls developed non-injection site tumor.
[1265] BS 5930; mephenamine.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
336. 4-DIMETHYLAMINO-3-HYDROXYDIPHENYL 								
Allen, M. J., et al., 1957	20 mice			1 part/4 parts cholesterol in 9–11 mg. pellet implant.	Urinary bladder.	0[1266,1267]	11 at 40 wks	At least 40 wks.
337. 4-DIMETHYLAMINOSTILBENE 								
Peacock, P. R., and Peacock, A., 1954.	13 fowls	White Leghorn	M	0.4% in arachis oil, total dose 0.5–0.8 gm.	Inj. into pectoral muscle.	0	11 survived over 132 wks.	208 wks.
Druckrey, H., and Schmähl, D., 1956.	11 rats	Wistar		0.2–0.6 mg. daily in food	P.O	Tumors[1268]		
Schmähl, D., and Meche, R., Jr., 1956.	11 rats	Wistar II		0.2 mg. daily in food	P.O	Tumors[1268]		
Schmähl, D., and Mecke, R., Jr., 1956.	12 rats	Wistar II		0.6 mg. daily in food	P.O	Tumors[1269]		
Schmähl, D., 1959	38 rats	BD II		1 mg./kg. daily.	P.O	Tumors[1270]		450 d.
Schmähl, D., 1959	32 rats	BD II		2 mg./kg. daily every 2nd wk	P.O	Tumors[1271]		418 d.
338. 4-DIMETHYLAMINOTRIPHENYLMETHANE 								
Druckrey, H., and Schmähl, 1955.	56 rats	Wistar & BD		10–30 mg. daily in food, total dose 7.3 g.	Orally	0		800 d.
Druckrey, H., and Schmähl, 1955.	10 rats			30 mg. once a wk. for 12 wks., in soya oil.	S.C	5 sarcomas	9 at 2 yrs	32 mos.

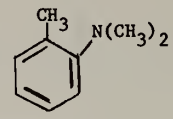
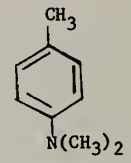
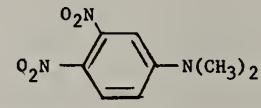
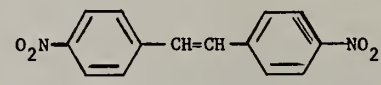
[1266] 1 papilloma (or adenoma) and 1 urinary cystic carcinoma.
[1267] 1/24 cholesterol controls with urinary carcinoma.
[1268] 11 otic carcinomas.
[1269] 12 otic carcinomas.
[1270] 30 otic carcinomas.
[1271] 26 otic carcinomas, 2 mammary carcinomas.
[1272] Death on day 115 with purulent bronchitis and pulmonary abscesses. 6 mo. survivor with alveolar hemorrhage and enteric edema.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
339. 3,4-DIMETHYLANILINE 								
Morris, H. P., et al., 1957	18 rats	Buffalo	F	1.12 m. moles/kg. in diet for 9½ mos	P.O	Tumors[1273]		19½ mos.
340. N,N′-DI α METHYLBENZYLETHYLENEDIAMINE DIACETATE 								
Seifter, J., et al., 1954	7 dogs			29 mg./kg. thrice wkly. for total of 32–34 doses.	I.M	0		11 wks.
Seifter, J., et al., 1954	20 rats	Albino	M & F	0.25–0.5% in the diet for 6 mos	P.O	None		6 mos.
Seifter, J., et al., 1954	6 cats			29 mg./kg. thrice wkly. for total of 31–32 doses.	I.M	0		10 wks.
341. 2,4-DIMETHYLPHENOL 								
Boutwell, R. K., and Bosch, D. K., 1959.	24 mice	Sutter	F	20% soln. in benzene given twice wkly. for 39 wks.	Skin	Tumors[1274]	19 at 24 wks	39 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	29 mice	Sutter	F	10% soln. in benzene given twice wkly. for 28 wks.	Skin	Tumors[1275]	26 at 20 wks	28 wks.
342. 2,5-DIMETHYLPHENOL 								
Boutwell, R. K., and Bosch, D. K., 1959.	30 mice	Sutter	F	10% soln. in benzene given twice wkly. for 28 wks.	Skin	Tumors[1276]	25 at 20 wks	28 wks.

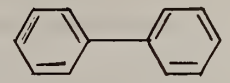
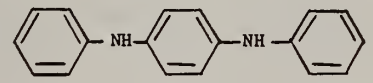
[1273] 60% pituitary adenomas, 2 with adrenocortical adenoma, 1 with uterine leiomyoma. 10–15% untreated controls developed pituitary adenomas.
[1274] 63% with papillomas, (avg. 1.42/mouse); 42% with carcinoma at 39 wks.
[1275] 31% with papillomas (avg. 0.66/mouse); 12% with carcinoma at 28 wks.
[1276] 24% with papillomas, (avg. 0.40/mouse); 8% with carcinoma at 28 wks.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
343. 2,6-DIMETHYLPHENOL 								
Boutwell, R. K., and Bosch, D. K., 1959.	30 mice	Sutter	F	10% soln. in benzene given twice wkly. for 20 wks.	Skin	Tumors[1277]	26 at 20 wks	20 wks.
344. 3,4-DIMETHYLPHENOL 								
Boutwell, R. K., and Bosch, D. K., 1959.	29 mice	Sutter	F	10% soln. in benzene given twice wkly. for 28 wks.	Skin	Tumors[1278]	28 at 20 wks	28 wks.
345. 3,5-DIMETHYLPHENOL 								
Boutwell, R. K., and Bosch, D. K., 1959.	30 mice	Sutter	F	10% soln. in benzene given twice wkly. for 28 wks.	Skin	Tumors[1279]	22 at 20 wks	28 wks.
346. N-DIMETHYL-m-TOLUIDINE 								
Druckrey, H., et al., 1954	28 rats, 100 d. old.	BDI, BDIII & W.		14 mg.[1280] daily in the diet, total dose 10 g.	P.O	0[1281]	730 d	Life.
Druckrey, H., et al., 1954	84 rats	BDI, BDIII, W	M & F	14 mg. daily mixed with food, total 10 g. per animal.	P.O	0[1282]	730 d	At least 730 d.

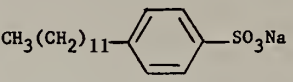
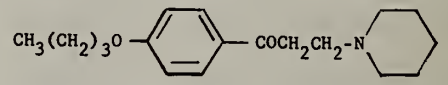
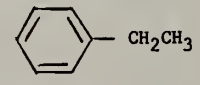
[1277] 8% with papillomas, (avg. 0.15/mouse).
[1278] 50% with papillomas, (avg. 0.71/mouse). 14% with carcinoma at 28 wks.
[1279] 55% with papillomas (avg. 0.91/mouse). 14% with carcinoma at 28 wks.
[1280] Reagent grade.
[1281] 1 spontaneous mammary fibroadenoma.
[1282] 1 spontaneous mammary fibroadenoma.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
347. N-DIMETHYL-o-TOLUIDINE 								
Druckrey, H., et al., 1954	84 rats	BDI, BDIII, W	M & F	14 mg. daily mixed with the food total 10 g. per animal.	P.O	0[1283]	660 d	At least 660 d.
Drukrey, H., et al., 1954	28 rats, 100 d. old.	BDI, BDIII, W		14 mg.[1280] daily in the diet, total dose 10 g.	P.O	Tumors[1284]	660 d	Life.
348. N-DIMETHYL-p-TOLUIDINE 								
Druckrey, H., et al., 1954	84 rats	BDI, BDIII, W	M & F	7 mg. daily mixed with the food, total 5 g. per animal.	P.O	0	764 d	At least 764 d.
Druckrey, H., et al., 1954	28 rats, 100 d. old.	BDI, BDIII		7 mg.[1280] daily in the diet, total dose 5 g.	P.O	0[1281]	766 d	Life.
349. 3,4-DINITRODIMETHYLANILINE 								
Miller, J. A., et al., 1957	10 adult rats	Albino, Holtzman.	M	Dissolved in corn oil, 2.67 mM/kg. of diet for 12 mos.	P.O	0	All alive throughout experiment.	12 mos.
350. 4,4′-DINITROSTILBENE 								
Schmähl, D., 1956	24 rats	Wistar		4–6 mg. daily total dose 1.2 g. in food.	P.O	0	8.5 mo. (half-life)	14 mos.

[1280] Reagent grade.
[1281] 1 spontaneous mammary fibroadenoma.
[1283] 1 hepatic sarcoma, 2 spontaneous mammary fibroadenomas.
[1284] 1 hepatic spindle cell sarcoma due to cysticerci, 2 spontaneous mammary fibroadenoma.

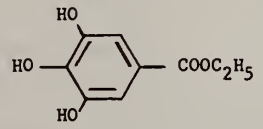
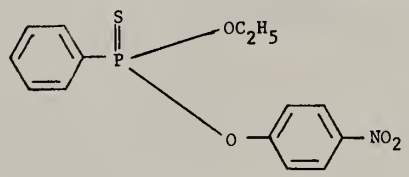
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
351. DIPHENYL 								
Pecchiai, L., and Saffiotti, U., 1957.	29 rats	Albino	M	0.5, 1, 1.5, 2 or 3 g. once in 25% soln. of olive oil.	P.O., stomach tube.	0		Up to 7 mos.
Pecchiai, L., and Saffiotti, U., 1957.	16 rats	Albino	M	50–100 mg. daily in the diet	P.O	Tumors[1285]		Up to 13 mos.
352. DIPHENYLAMINE $(C_6H_5)_2NH$								
Thomas, J. O., et al., 1957	6 rats	Albino	F	0.1% in diet for 226 d	P.O	0	1 killed at 156 d., 5 at 226 d.	226 d.
Thomas, J. O., et al., 1957	6 rats	Albino	F	0.5% in diet for 226 d	P.O	0[1286]	100%	226 d.
Thomas, J. O., et al., 1957	6 rats	Albino	F	0.025% in diet for 226 d	P.O	0	100%	226 d.
Thomas, J. O., et al., 1957	6 rats	Albino	F	1.5% in diet for 226 d	P.O	0[1287]	100%	226 d.
Thomas, J. O., et al., 1957	6 rats	Albino	F	1.0% in diet for 226 d	P.O	0[1286]	100%	226 d.
353. N,N′-DIPHENYL-p-PHENYLENEDIAMINE 								
Draper, H. H., et al., 1956	14 rats	Sprague-Dawley.	F	0.025% in vitamin E—low diet	P.O	0		6 wks.
Draper, H. H., et al., 1956	Rats	Sprague-Dawley.	F	0.5% in diet for 12 wks	P.O	0		12 wks.
Draper, H. H., et al., 1956	17 rats	Sprague-Dawley.	F	0.01% in vitamin E—low diet	P.O	0		6 wks.
Draper, H. H., et al., 1956	10 rats	Sprague-Dawley.	F	0.385 mg./wk. in 3 doses, approx. 0.0006% of diet.	P.O	0		6 wks.
Draper, H. H., et al., 1956	10 rats	Sprague-Dawley.	F	0.1% in vitamin E-low diet	P.O	0		6 wks.
Draper, H. H., et al., 1956	16 rats	Sprague-Dawley.	F	0.005% in vitamin E-low diet	P.O	0		6 wks.

[1285] 2 with papillomas, 1 with forestomach squamous cell carcinoma.
[1286] Renal cysts.
[1287] Renal cysts.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
354. DODECYLBENZENE SODIUM SULFONATE 								
Paynter, D. E., and Weir, R. J., Jr., 1960.	20 rats	Carworth Farms, albino.	M	2,000 ppm.[1288] in diet	P.O	0		104 wks.
Paynter, O. E. ,and Weir, R. J., Jr., 1960.	20 rats	Carworth Farms, albino.	M	200 ppm.[1289] in diet	P.O	0		104 wks.
Paynter, O. E., and Weir, R. J., Jr., 1960.	40 rats	Carworth Farms, albino.	20 M & 20 F	1,000 ppm.[1289] in diet	P.O	0		104 wks.
355. DICLONINE-4-BUTOXY-β-(1-PIPERIDYL)PROPIOPHENONE 								
Abreu, B. E., et al., 1955	16 rats	Albino	M & F	11 mg./kg. daily	I.P	0		30 d.
Abreu, B. E., et al., 1955	1 dog (8 kg.)	Irish Setter	M	5–12 mg./kg. twice daily, 1 hr. before meals.	I.M. or S.C	0	Wt. at sacrificing 12 kg.	24 wks.
Abreu, B. E., et al., 1955	1 dog (9.2 kg.).	Irish Setter	F	5–12 mg./kg. twice daily, 1 hr. before meals.	I.M. or S.C	0	Wt. at sacrificing 18 kg.	62 wks.
Abreu, B. E., et al., 1955	16 rats	Albino	M & F	23 mg./kg. daily	I.P	0		30 d.
356. ETHYLBENZENE 								
Wolf, M. A., et al., 1956	Rats	White	M & F	13.6, 136, 408 or 680 mg./kg./d. in 2–3 ml. olive oil soln. emulsified with 5–10% aqueous soln. of acacia for 130 feedings.	P.O., stomach tube.	0		182 d.
Wolf, M. A., et al., 1956	Rats	White	M & F	Avg. conc. of 2.6 mg./l. vapor for (130) 7 hr. exposures.	Inhalation	0		186 d.
Wolf, M. A., et al., 1956	Rats	White	M & F	Avg. conc. of 1.7 mg./l. vapor for (130) 7 hr. exposures.	Inhalation	0		186 d.
Wolf, M. A., et al., 1956	Guinea pigs	Albino	F	Avg. conc. of 5.4 mg./l. vapor for (138) 7 hr. exposures.	Inhalation	0		214 d.
Wolf, M. A., et al., 1956	Guinea pigs	Albino	M & F	Avg. conc. of 2.6 mg./l. vapor for (130) 7 hr. exposures.	Inhalation	0		186 d.

[1288] 97–98.5% pure.

[1289] Santomerse #3. 97–98.5% pure.

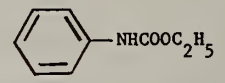
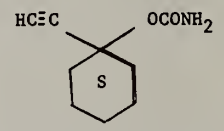
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
356. ETHYLBENZENE (Continued)								
Wolf, M. A., et al., 1956	Guinea pigs	Albino	M & F	Avg. conc. of 1.7 mg./l. vapor for (130) 7 hr. exposures.	Inhalation	0		186 d.
Wolf, M. A., et al., 1956	Rabbits		F	Avg. conc. of 5.4 mg./l. of vapor for (138) 7 hr. exposures.	Inhalation	0		214 d.
Wolf, M. A., et al., 1956	Rabbits		M & F	Avg. conc. of 1.7 mg./l. vapor for (130) 7 hr. exposures.	Inhalation	0		186 d.
Wolf, M. A., et al., 1956	Rabbits		M & F	Avg. conc. of 2.6 mg./l. vapor for (130) 7 hr. exposures.	Inhalation	0		186 d.
Wolf, M. A., et al., 1956	Monkeys	Rhesus	M & F	Avg. conc. of 2.6 mg./l. vapor for (130) 7 hr. exposures.	Inhalation	0		186 d.
Wolf, M. A., et al., 1956	Monkeys	Rhesus	F	Avg. conc. of 1.7 mg./l. vapor (130) 7 hr. exposures.	Inhalation	0		186 d.
Wolf, M. A., et al., 1956	Rats	White	M & F	Avg. conc. of 5.4 mg./l. vapor for (138) 7 hr. exposures.	Inhalation	0		214 d.
Wolf, M. A., et al., 1956	Rats	White	M	Avg. conc. of 9.5 mg./l. vapor for (103) 7 hr. exposures.	Inhalation	0		144 d.
357. ETHYL GALLATE 								
Roy, B. R., 1953	10 rats	Albino	M & F	1% in synthetic diet for 10 wks	P.O	0[14]		13 wks.
Roy, B. R., 1954	10 rats	Albino	M & F	1% in the diet for 10 wks.	P.O	None[1290]		10 wks.
358. ETHYL p-NITROPHENYL THIONOBENZENE PHOSPHONATE 								
Hodge, H. C., et al., 1954	150 rats	Rochester	M	50, 150 & 450 ppm. in the diet	P.O	0[1291]	86–98% died (15 alive at 2 yrs.).	2 yrs.
Hodge, H. C., et al., 1954	150 rats	Rochester	F	25, 75 & 225 ppm. in the diet	P.O	Tumors[1292]	86–98% died (21 alive at 2 yrs.).	2 yrs.
Hodge, H. C., et al., 1954	2 dogs			4 mg./kg. & 8 mg./kg. in the diet	P.O	0	1 died at 3 wks	8 wks.

[14] No pathology given.

[1290] No pathology report. Reported non-toxic.

[1291] 1 enteric tumor, 1 hepatic tumor, 1 urinary cystic calculus. Tumor occurrence consistent with controls.

[1292] 1 colonic tumor, 1 mammary tumor, 1 renal granuloma, Tumor occurrence consistent with controls.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
358. ETHYL p-NITROPHENYL THIONOBENZENE PHOSPHONATE (Continued)								
Hodge, H. C., et al., 1954	2 dogs		M & F	0.1, 0.5 & 2.0 mg./kg. daily in the diet	P.O	0	100%	1 yr.
Hodge, H. C., et al., 1954	15 rats	Albino	M	100, 300 & 600 ppm. in diet	P.O	0	Some died in highest level group.	30 d.
359. ETHYL N-PHENYL CARBAMATE 								
Roe and Salaman, 1955	20 mice	Albino "S" strain.	M	Two 0.3 ml. applications of 13.9% soln. in acetone (with 15-min. intervals) on 1st, 3rd, 5th, 8th, 10th, & 12th d. (Total dose: 500 mg.)[318]	Skin	6 (19 skin tumors).	19 at 21 wks	At least 22 wks.
Salaman and Roe, 1956	20 mice	Albino "S" strain.		2 applications (30 min. apart) of 20% soln. in acetone wkly. for 15 wks. (total dose—1.8 g.)[1293,1294].	Skin	8 (total of 22 pap.)	17 at about 38 wks.	Approx. 40 wks.
360. ETHYNYLCYCLOHEXYL CARBAMATE[1295] 								
Swanson, E. E., et al., 1956	5 rats		F	2.0% in diet for 28 wks., avg. daily intake 132 mg.	P.O	0	1 died at 20 d	28 wks.
Swanson, E. E., et al., 1956	5 rats		F	1.0% in diet for 28 wks. avg. daily intake 69 mg.	P.O	0	100%	28 wks.
Swanson, E. E., et al., 1956	5 rats		F	0.50% in diet for 28 wks. avg. daily intake 58 mg.	P.O	0	100%	28 wks.
Swanson, E. E., et al., 1956	5 rats		F	0.25% in diet for 28 wks. avg. daily intake 34 mg.	P.O	0	100%	28 wks.
Swanson, E. E., et al., 1956	3 dogs	Mongrel	F	50 mg./kg. in gelatin capsule for 205 consecutive daily doses.	P.O	0	100%	205 d.
Swanson, E. E., et al., 1956	3 dogs	Mongrel	F	25 mg./kg. in gelatin capsule for 205 consecutive daily doses.	P.O	0	100%	205 d.
Swanson, et al., 1956	3 dogs	Mongrel	F	50 mg. pK. daily	P.O	0	100%	205 d.
Swanson, et al., 1956	5 rats (75–97 g).		F	2% diet	P.O	0	1 died at 20 d	28 wks.
Swanson, et al., 1956	5 rats (75–97 g).		F	1.0% diet	P.O	0	100%	28 wks.

[318] 18 weekly applications of 0.3 ml. of 0.5% croton oil in acetone solution begun 3 weeks post-treatment.

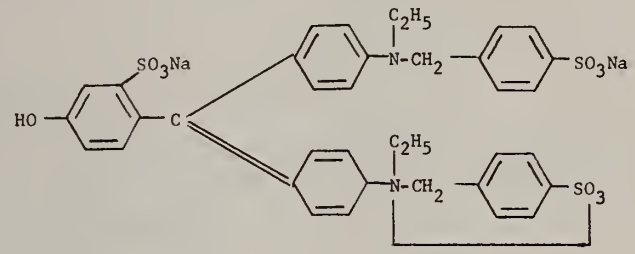
[1293] Phenylurethane.

[1294] 18 weekly applications of 0.5% croton oil in acetone begun 20 wks. after initial treatment.

[1295] Valmid.

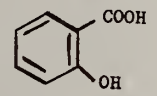
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
360. ETHYNYLCYCLOHEXYL CARBAMATE[1295] (Continued)								
Swanson, et al., 1956	5 rats (75–97 g).		F	0.50% diet	P.O	0	100%	28 wks.
Swanson, et al., 1956	3 dogs	Mongrel	F	25 mg. pK. daily	P.O	0	100%	205 d.
Swanson, et al., 1956	5 rats (75–97 g).		F	0.25% diet	P.O	0	100%	28 wks.

361. FAST GREEN FCF[1296]



Nelson, Arthur A. and Hagan, E. Conway, 1953.	Rats	Osborne-Mendel	M & F	2% in food for 730 d	P.P	0		730 d.
Nelson, Arthur A. and Hagen, E. Conway, 1953.	18 rats	Osborne-Mendel	M & F	1 or 2% 1 ccm. wkly. for 693 d	S.C	Tumors[1297]		693 d.
Hesselbach, M. L., and O'Gara, R. W., 1960.	16 rats	Fischer	F	0.5 ml. of 6% soln.[1298] (30.0 mg.) in dist. water twice wkly. for 19 wks., then 3% twice wkly. for 9 wks., once wkly. for 22 wks., thereafter.	S.C	Tumors[1299, 1300]		11 mos.
Hesselbach, M. L., and O'Gara, R. W., 1960.	16 rats	Fischer	F	0.5 ml. of 3% soln.[1298] (15.0 mg.) in dist. water twice wkly. for 26 wks., thereafter once wkly. for 22 wks.	S.C	Tumors[1300, 1301]	2 killed accidentally at 6 & 6½ mos.	11 mos.
Hesselbach, M. L., and O'Gara, R. W., 1960.	5 rats		F	0.5 ml. of 3% soln. in dist. water once.[1298]	S.C	0		16 mos., still under observation.

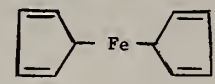
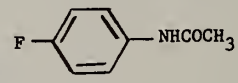
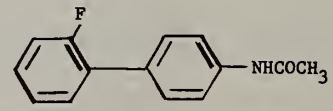
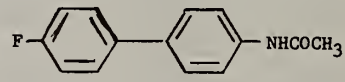
362. FERRIC SALICYLATE



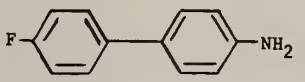
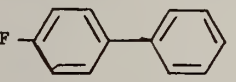
Fe^{III} salt

Haddow, A., and Horning, E. S., 1960.	20 mice	Stock		5 mg. wkly. for 36 wks.	S.C	0	14 at 12 mos	12 mos. to date.

[1296] FD&C Green No. 3.
[1297] Injection site fibrosarcomas after 40–45 wks.
[1298] Color index #42053.
[1299] 13 injection site fibrosarcomas, 1 nodule, 2 questionable.
[1300] 10 distilled water injection controls negative at 17.5 mos.
[1301] 10 injection site fibrosarcomas, 1 fibrous lesion, 1 questionable.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
363. FERROCENE 								
Haddow, A., and Horning, E. S., 1960.	20 mice	Stock		5 mg. wkly. for 28 wks	S.C	0	17 at 9 mos	9 mos. to date.
364. p-FLUOROACETANILIDE 								
Morris, H. P., et al., 1957	18 rats	Buffalo	F	1.12 m. moles/kg. in diet for 15½ mos.	P.O	Tumors[1302]		19½ mos.
365. 2′-FLUORO-4-ACETYLAMINOBIPHENYL 								
Miller et al., 1956	10 rats	Albino	M	1.62 mM/kg. diet	P.O	0	9 at 8 mos	10 mos.
Miller et al., 1956	10 rats	Albino	F	1.62 mM/kg. diet	P.O	0	10 at 8 mos	10 mos.
366. 4′-FLUORO-4-ACETYLAMINOBIPHENYL 								
Miller et al., 1956	7 rats	Albino	M	1.62 mM/kg. diet	P.O	Tumors[1303]	7 at 8 mos.	12 mos.
Miller et al., 1956	10 rats	Albino	F	1.62 mM/kg. diet	P.O	Tumors[1304]	9 at 8 mos	12 mos.
Morris et al., 1957	18 rats	Buffalo	F	Carcinogen dissolved in propylene glycol & then incorporated into diet at level of 0.025% of complete diet for 11.7 mos. (avg.).[1305]	P.O	16 (62 tumors)[1306].	12 at 48 wks.[1307]	At least 54 wks.

[1302] 50% pituitary adenomas. 10–15% of untreated controls developed pituitary adenomas.
[1303] 5 hepatic tumors; 1 otic tumor; 1 renal cortical adenoma at 12 mos.
[1304] 9 mammary tumors (8 adenocarcinomas), 2 otic tumors (fibroadenoma).
[1305] 12 survivors treated 47 weeks (858 mg. total); 9 survivors treated 54 weeks (963 mg. total).
[1306] 38 mammary tumors (35 carcinomas, 3 carcinosarcomas), 8 renal tumors, 2 otic squamous cell carcinomas, 1 uterine sarcoma; 1 enteric mucoid carcinoma, 11 hepatic tumors, 1 splenic sarcoma.
[1307] Necropsied at 14.3 mos. age (avg.).

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
367. 4′-FLUORO-4-AMINODIPHENYL 								
Hendry, J. A., et al., 1955	24 rats	Wistar albino	M	Initial dose 5 mg./100 g. body wt. in arachis oil B.P. soln. daily exc. Sat. & Sun., reduced progressively 1st 7 wks. to 1 mg./100 g.	S.C.	Tumors[1308]	1 died at 48 d., avg. 515 d.	At least 626 d.
Matthews, Joyce J. and Walpole, A. L., 1958.	27 rats	Wistar albino	M	5 mg./100 g. body wt., 5 d./wk. up to 6 mos.	S.C. flank	Tumors[1309, 1310]	8 killed in 6 d	6 mos.
Matthews, Joyce J. and Walpole, A. L., 1958.	24 rats	Wistar albino	M	5 mg. reduced to 1 mg./100 g. body wt. during first 7 wks., given 5 d./wk. for total of 20 wks.	S.C. flank	Tumors[1310, 1311]	1 died at 48 d.	626 d.
368. 4-FLUOROBIPHENYL 								
Miller et al., 1956	9 rats	Albino	M	1.62 mM/kg. diet	P.O.	0	7 at 8 mos	10 mos.
Miller et al., 1956	9 rats	Albino	F	1.62 mM/kg. diet	P.O.	1 mammary gland tumor.	8 at 8 mos	10 mos.
369. FUCHSIN[1312] [5417]								
Bonser, et al., 1956	30 mice	Stock Albino	M	0.2 cc. of 3% susp. in arachis oil, twice wkly. for 52 wks. (Total dose per mouse, 624 mg.).	P.O., stomach tube.	2 (lymphomas).	7 alive at 20 wks	70–89 wks.
	30 mice	Stock Albino	F	0.2 cc. of 3% susp. in arachis oil, twice wkly. for 52 wks. (Total dose per mouse, 624 mg.).	P.O., stomach tube.	Tumors[5418]	13 alive at 20 wks.	More than 90 wks.
Druckrey, H., et al., 1956	20 rats	BD		10 mg. (1% aq. soln.) wkly. for 515 d., total dose 650 mg.[1313]	S.C.	Tumors[1314]	Half life, 545 d., 12 rats at 10 mos. first tumor.	

[1308] 1 lymphosarcoma, 1 mediastinal spindle cell sarcoma, 3 injection site sarcomas. 100% (23) with tumors: 22 hepatic, 20 renal (10 bilateral) 8 enteric, 3 pancreatic, 1 exocrine adenoma, 3 testicular interstitial cell tumors.

[1309] Hepatomas and cholangiomas at 5 mos. Renal tumors at 6 mos.

[1310] Renal tumors rare in this strain.

[1311] 22 hepatomas and cholangiomas. (1 possible adenocarcinoma.) 20 with renal tumors, 8 with enteric tumors. Pancreatic adenomas (number not given). Injection site spindle cell sarcomas and testicular tumors (no details).

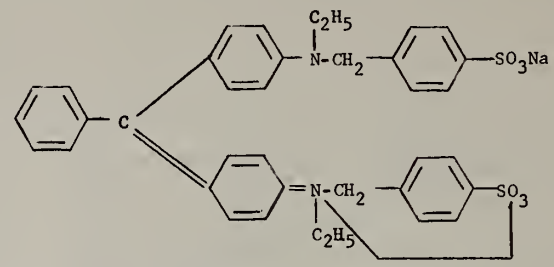
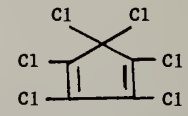
[1312] Parafuchsin.

[1313] Chromatographically pure.

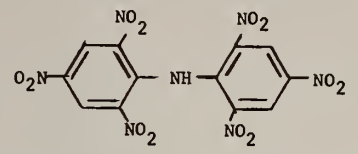
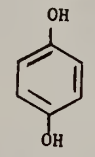
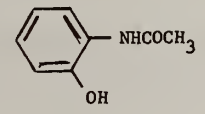
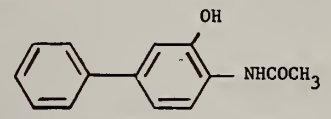
[1314] 7 spindle cell sarcomas.

[5417] Magenta.

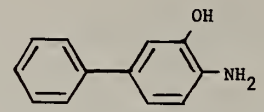
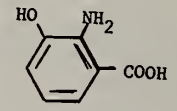
[5418] 2 lymphomas, 1 hepatoma.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
370. GUINEA GREEN B[1315] 								
Nelson, Arthur A. and Hagan, E. Conway, 1953.	18 rats	Osborne-Mendel.	M & F	2 or 3%, 1 ccm. wkly. for 693 d	S.C	Tumors[1318]		693 d.
371. HEXACHLOROCYCLOPENTADIENE 								
Treon, J. F., et al., 1955	1 monkey			0.01 ml. each of 10, 1.0, 0.1, 0.01 & 0.001 solns.[1317] followed in 10 d. by 0.5 ml. each of 90, 60, 40 & 20% solns. in ultrasene.	Skin, 10 different sites on back & abdomen.	0[14]		
Treon, J. F., et al., 1955	2 guinea pigs.			0.0037 mg./l. air (0.34 ppm.) 7 hrs. of exposure 5 d./wk. for 6 wks.[1318]	Inhalation	0	All alive after 6 wks.	
Treon, J. F., et al., 1955	6 rabbits			0.0037 mg./l. air (0.34 ppm.) 7 hrs. of exposure 5 d./wk. for 5 wks.[1318]	Inhalation	0	2 alive after 5 wks.	At least 5 wks.
Treon, J. F., et al., 1955	2 guinea pigs.			0.0017 mg./l. air (0.15 ppm.) 150 7 hr. periods of exposure.[1318]	Inhalation	0	All alive at 216 d	At least 216 d.
Treon, J. F., et al., 1955	3 rabbits			0.0017 mg./l. air (0.15 ppm.) 150 7 hr. periods of exposure.[1318]	Inhalation	0	All alive at 216 d	At least 216 d.
Treon, J. F., et al., 1955	5 mice			0.0017 mg./l. air (0.15 ppm.) 150 7 hr. periods of exposure.[1318]	Inhalation	0	4 died before 216 d.	At least 216 d.
Treon, J. F., et al., 1955	4 rats			0.0017 mg./l. air (0.15 ppm.) 150 7 hr. periods of exposure.[1318]	Inhalation	0	All alive at 216 d	At least 216 d.
Treon, J. F., et al., 1955	1 monkey			10% v/v soln.[1317] in ultrasene, 0.05 ml./kg. body wt. daily for 3 d.	Skin	0[14]		At least 13 mos.

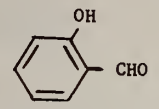
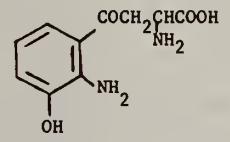
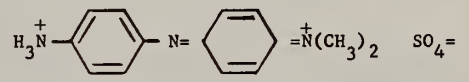
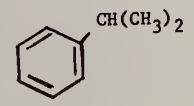
[14] No pathology given.
[1315] FD&C Green No. 1.
[1316] 1 injection site tumor.
[1317] Contained 93.3% active material.
[1318] Contained 89.5% active material.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
372. HEXANITRODIPHENYLAMINE 								
Van Esch, G. J., et al., 1957	Rats	Wistar[1319]	M	500 ppm. mixed in food	P.O	0		Up to 2 & 2½ yrs.
Van Esch, G. J., et al., 1957	Mice	DBAF x 020 F_1		500 ppm. mixed in food for 21 mos	P.O	([1320])		Experiment still in progress.
Van Esch, G. J., et al., 1957	10 rats	Wistar[1319]	F	500 ppm. mixed in food	P.O	Tumors[1321, 1322, 1323]	1 after 2 yrs	Up to 2 & ½ yrs.
373. HYDROQUINONE 								
Roe and Salaman, 1955	24 mice	Stock albino "S" strain.	M	0.3 ml. of 6.7% soln. in acetone, once (total dose: 20.0 mg.)[318].	Skin	1 (skin tumor).	22 at 21 wks	At least 22 wks.
374. o-HYDROXYACETANILIDE 								
Morris, H. P., et al., 1957	18 rats	Buffalo	F	1.12 m. moles/kg. in diet for 14½ mos.	P.O	Tumors[1302]		19½ mos.
375. 3-HYDROXY-4-ACETYLAMINOBIPHENYL 								
Miller et al., 1956	4 rats	Albino	M	1.62 mM/kg. diet	P.O	0	4 at 8 mos	13 mos.
Miller et al., 1956	8 rats	Albino	F	1.62 mM/kg. diet	P.O	1 mammary gland tumor.[1324]	8 at 8 mos	13 mos.

[318] 18 weekly applications of 0.3 ml. of 0.5% croton oil in acetone solution begun 3 weeks post-treatment.
[1302] 50% pituitary adenomas. 10–15% of untreated controls developed pituitary adenomas.
[1319] Derived from.
[1320] No observed effect.
[1321] 10 with multiple fibrous mammary tumors at avg. 19 mos.
[1322] 8/19 controls with mammary tumors (avg. 25 mos.).
[1323] Transplantation experiments negative.
[1324] Fibroadenoma.

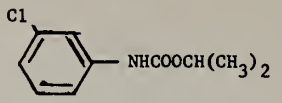
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
376. 3-HYDROXY-4-AMINOBIPHENYL 								
Bonser, et al., 1956	38 mice	Albino		Paraffin wax pellet.[5419]	Implanation into lumen of the bladder.	Tumors[5420]	6 killed before 35 wks.	40 wks.
Miller et al., 1956	7 rats	Albino	F	1.62 mM/kg. diet	P.O	3 mammary gland tumors.[1324]	7 at 8 mos	13 mos.
Miller et al., 1956	6 rats	Albino	M	1.62 mM/kg. diet	P.O	0	6 at 8 mos.	13 mos.
377. 3-HYDROXYANTHRANILIC ACID 								
Boyland, E., and Watson, G., 1956.	20 mice			20% in cholesterol pellet	Bladder implant, lumen of bladder tied off.	Tumors[1325, 1226]	14 at 40 wks	40 wks.
Boyland, E., and Watson, G., 1956.	30 mice			20% in paraffin wax pellet	Bladder implant, lumen of bladder tied off.	Tumors[1327, 1328]	19 at 40 wks	40 wks.
Allen, M. J., et al., 1957	60 mice			1 part/4 parts cholesterol in 9–11 mg. pellet implant.	Urinary bladder	Tumors[1329, 1330]	24 at 52 wks	52 wks.
Allen, M. J., et al., 1957	30 mice			1 part/4 parts paraffin wax in 8–12 mg. pellet implant.	Urinary bladder	Tumors[1331, 1332]	5 at 52 wks	52 wks.
Clayson, D. B., et al., 1958	21 mice	Albino		12.5% in compressed cholesterol pellet.	Implanted into the lumen of bladder.	0[1333, 1334]	1 killed after 25 wks.	40 wks.

[1324] Fibroadenoma.
[1325] 4 urinary cystic carcinomas.
[1326] 25 cholesterol treated controls negative.
[1327] 3 urinary cystic carcinomas.
[1328] 20 paraffin controls negative.
[1329] 3 with papillomas or adenoma; 8 with urinary cystic carcinomas.
[1330] 1/24 cholesterol controls with urinary cystic carcinoma.
[1331] 1 urinary cystic carcinoma.
[1332] Paraffin controls negative.
[1333] 3 carcinomas, 2 invasive and 1 noninvasive. 2 benign urinary cystic tumors (Possible carcinogenicity).
[1334] 5/55 cholesterol controls developed noninvasive carcinomas.
[5419] Sulfate. Dose not specified.
[5420] 1 benign urinary cystic tumor, 9 carcinomas (2 invasive).

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
378. 2-HYDROXYBENZALDEHYDE 								
Boutwell, R. K., and Bosch, D. K., 1959.	31 mice	Sutter	F	20% soln. in dioxane given twice wkly. for 12 wks.	Skin	0	100%	12 wks.
379. 3-HYDROXYKYNURENINE 								
Allen, M. J., et al., 1957	35 mice			1 part/4 parts cholesterol in 9–11 mg. pellet implant.	Urinary bladder	Tumors[1335], [1330].	4 at 52 wks	52 wks.
380. 4-IMINO-4′-DIMETHYLAMINODIPHENYLIMINE SULFATE 								
Miller, J. A., et al., 1957	15 adult rats	Albino, Holtzman.	M	Dissolved in corn oil, 2.67 mM/kg. of diet for 8 mos.	P.O	0	All alive after 8 mos.	10 mos.
381. ISOPROPYL BENZENE 								
Wolf, M. A., et al., 1956	Rats	White	M & F	154, 462, or 769 mg./kg./d. in 2–3 ml. olive oil soln. emulsified with 5–10% aqueous soln. of acacia for 139 feedings.	P.O., stomach tube.	0		194 d.

[1330] 1/24 cholesterol controls with urinary cystic carcinoma.

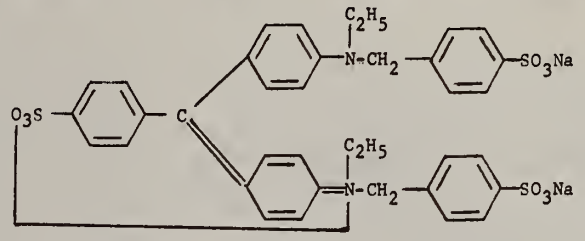
[1335] 7 urinary cystic tumors; 1 papilloma (adenoma), 6 carcinomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
382. ISOPROPYL N-(3-CHLOROPHENYL)CARBAMATE 								
van Esch, G. J., et al., 1958	30 mice	Swiss	15 F & M	15 mg. in 1% tragacanth susp. once.[1336]	P.O., stomach tube.	6[1337,1338]	24 at 6 mos	16 mos.
van Esch, G. J., et al., 1958	30 mice	Swiss	15 F & M	0.1% in diet for 6 mos. simultaneously given skin applications of undiluted Tween 60 soln. in olive oil 6 times per wk. for 11 wks.	P.O	7[1339]	28 at 6 mos	
van Esch, G. J., et al., 1958	30 mice	Swiss	15 F & M	0.1% in diet for 6 mos., simultaneously given skin applications of 5% croton oil soln. in olive oil twice wkly. for 54 doses.	P.O	7[1338,1340]	28 at 6 mos	16 mos.
van Esch, G. J., et al., 1958	30 mice	Swiss	15 F & M	15 mg. in 1% tragacanth susp. once wkly. for 10 wks.[1336]	P.O., stomach tube.	2[1341,1338]	26 at 6 mos	16 mos.
Larson, P. S., et al., 1960	150 rats[1342]	Albino	75 M, 75 F	0.02, 0.2 & 2.0% in basic diet for 2 yrs.	P.O	0[1343]	26% in 0.02% level, 18% in 0.2% level and 8% in 2.0% level.	2 yrs.
Larson, P. S., et al., 1960	12 dogs[1344]	Beagle	6 M, 6 F	0.02, 0.2 & 2.0% in basic diet for 1 yr.	P.O	0	100%	1 yr.
384. ISOPROPYL-N-PHENYL CARBAMATE $C_6H_5NH\text{-}COOCH(CH_3)_2$								
Englehorn, R., 1954	9 rats	Albino		10 mg. as 3% oil soln	P.O	0	3 killed at 5th mo., 3 killed at 7th mo.	15 mos.
Englehorn, R., 1954	9 rats	Albino		15 mg. as 5% mixture with Kaolin powder.[1345]	P.O	0	3 killed at the 8th mo.	18 mos.
van Esch, G. J., et al., 1958	30 mice	Swiss	15 F & M	0.1% in diet for 6 mos., simultaneously given skin applications of 5% croton oil soln. in olive oil twice wkly. for 54 doses.	P.O	6[1338,1346]	27 at 6 mos	16 mos.
van Esch, G. J., et al., 1958	30 mice	Swiss	15 F & M	15 mg. in 1% tragacanth susp. once wkly. for 10 wks.[1347]	P.O., stomach tube.	1[1339,1348]	25 at 6 mos	16 mos.
van Esch, G. J., et al., 1958	30 mice	Swiss	15 F & M	15 mg. in 1% tragacanth susp. once.[1347]	P.O., stomach tube.	0[1339]	26 at 6 mos	16 mos.

[1336] 54 semiweekly applications of 5% croton oil in olive oil begun 3 days later.
[1337] Papillomas at 6 mos. (avg. 1.2/mouse).
[1338] 1/30 croton oil controls developed a papilloma.
[1339] 30/60 Tween controls, developed a papilloma.
[1340] Papillomas at 6 mos., avg. 1.1/mouse.
[1341] Papillomas at 6 mos., avg. 1.5/mouse.
[1342] 50 per group.
[1343] Unrelated tumors reported.
[1344] 4 per group.
[1345] Treatment suspended for 3 at 10th mo.
[1346] Papillomas at 6 mos., avg. 5.2/mouse.
[1347] 161 6 days/week applications of Tween 60 in olive oil begun 3 days later.
[1348] Multiple papillomas at 6 mos.

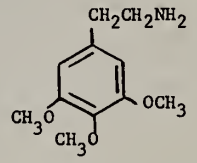
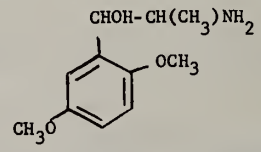
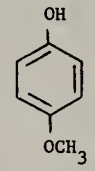
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
384. ISOPROPYL-N-PHENYL CARBAMATE $C_6H_5NH\text{-}COOCH(CH_3)_2$ (Continued)								
van Esch, G. J., et al., 1958	30 mice	Swiss	15 F & M	0.1% in diet for 6 mos., simultaneously given skin applications of undiluted Tween 60 soln. in olive oil 6 times per wk. for 161 doses.	P.O	1[1348,1339]	25 at 6 mos	16 mos.
van Esch, G. J., et al., 1958	30 mice	Swiss	15 F, 15 M	15 mg. in 1% tragacanth susp. once wkly. for 10 wks.[1335]	P.O., stomach tube.	8[1349,1338]	28 at 6 mos	16 mos.
van Esch, G. J., et al., 1958	30 mice	Swiss	15 F, 15 M	15 mg. in 1% tragacanth susp. once.[1335]	P.O., stomach tube.	4[1350,1338]	27 at 6 mos	16 mos.

385. LIGHT GREEN FS[1351]

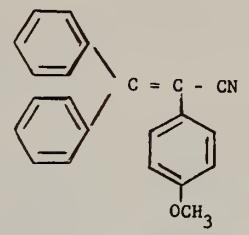
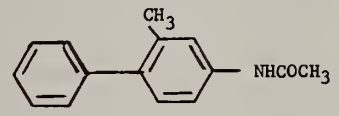


Harris, Paul N., 1947	30 rats	Wistar		2 cc. of 2% aqueous soln. twice, then 1 cc. given twice wkly. for 1 mo., then 3% sporadically up to 33 wks. Total 59 doses = 1.7 gm. dye.	S.C	Tumors[1352]	4 died within 8 wks., died after 19 wks.	Up to 85 wks.
Nelson, Arthur A., and Hagan, E. Conway, 1953.	18 rats	Osborne-Mendel.	M & F	1 or 2%, 1 ccm. wkly., for 693 d	S.C	Tumors[1353]		693 d.
Allmark, M. G., et al., 1956	50 rats		M & F	0.03% in diet	P.O	0	11 M at 65 wks., 12 F at 65 wks.	65 wks.
Allmark, M. G., et al., 1956	25 rats		F	1.5% in the diet	P.O	0	11 at 65 wks	65 wks.
Allmark, M. G., et al., 1956	50 rats		āā M & F	3.0% in the diet	P.O	0	9 M at 65 wks., 11 F at 65 wks.	65 wks.
Nelson, A. A., and Davidow, B., 1957.	Rats	Osborne-Mendel.		20 mg. in 2% aqueous soln. thrice wkly. for 2 yrs.	I.P	0		2 yrs.
Hesselbach, M. L., and O'Gara, R. W., 1960.	5 rats		F	0.5 ml. of 3% soln. in dist. water once.[1354]	S.C	0		16 mos., still under observation.
Hesselbach, M. L., and O'Gara, R. W., 1960	16 rats	Fischer	F	0.5 ml. of 3% soln. (15.0 mg.) in dist. water twice wkly. for 46 wks. [1354]	S.C	Tumors[1355, 1355].		11 mos.

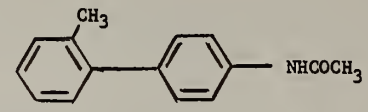
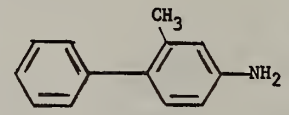
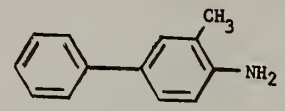
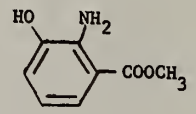
[1335] 54 semiweekly applications of 5% croton oil in olive oil begun 3 days later.
[1338] 1/30 croton oil controls developed a papilloma.
[1339] 30/60 Tween controls, developed a papilloma.
[1349] Papillomas at 6 mos., avg. 1.3/mouse. 1 with squamous cell carcinoma and 1 with sarcoma.
[1350] Papillomas at 6 mos., avg. 1.3/mouse.
[1351] FD&C Green No. 2.
[1352] 15 with injection site fibrosarcomas at 35–85 weeks.
[1353] Injection site fibrosarcomas.
[1354] Color Index No. 42095.
[1355] 16 injection site fibrosarcomas.
[1356] 10 distilled water controls negative at 17½ mos.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
385. LIGHT GREEN FS[1351] (Continued)								
Hesselbach, M. L., and O'Gara, R. W., 1960.	16 rats	Fischer	F	0.5 ml. of 6% soln. (30.0 mg.) in dist. water twice wkly. for 7 wks., thereafter 3% twice wkly. for 40 wks.[1354]	S.C	Tumors[1355, 1356]		11 mos.
Gross, unpublished data[1357]	10 rats			1 ccm. twice wkly., 2%	S.C	Tumors[1358]		
386. MESCALINE 								
Speck, L. B., 1954	10 (160–230 g.) rats.	Sprague-Dawley.	M	50 mg./kg. daily 5 d./wk	I.P	0	8	1.5 mo.
387. METHOXAMINE 								
Herbertson, B. M., and Kellaway, T. D., 1960.	15 rats	Albino & fawn	M & F	30 mg./kg. body wt. as 2% methoxamine HCl isotonic soln. with Na Cl, once.	I.M., I.P. or S.C.	0[1359]	7 killed between 22–32 d., 8 killed at 43 d.	43 d.
388. 4-METHOXYPHENOL 								
Boutwell, R. K., and Bosch, D. K., 1959.	30 mice	Sutter	F	13.1% in benzene given twice wkly. for 20 wks.	Skin	Tumors[1360]	25 at 20 wks	20 wks.

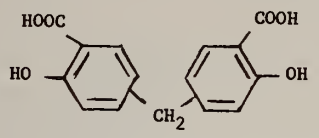
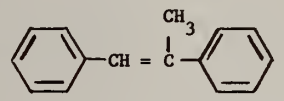
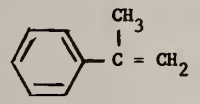
[1354] Color Index No. 42095.
[1355] 16 injection site fibrosarcomas.
[1356] 2 with urinary cystic carcinoma.
[1357] Recorded in Toxikologische Daten, etc.
[1358] 8 with injection site sarcoma.
[1359] Arterial necrosis with healing in 4–6 weeks. Renal ischemia and pancreatic edema.
[1360] 4% with papillomas, avg. 0.04/mouse.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
389. α-(p-METHOXYPHENYL), β, β-DIPHENYLACRYLONITRILE 								
Nishizuka, Y., et al., 1955	Rats			100 rats for 30 d				30 d.
Nishizuka, Y., 1955	47 mice	35 NA_2, 12 hybrid.		Soln. in oil or pellets for over 6 mos	S.C	Tumors[1361]	24 (NA_2) still alive	More than 6 mos.
Nishizuka, Y., 1955	47 mice	35 NA_2, 12 hybrid.		302 (3 rat units) or 2–3 mg. pellet	S.C.	Tumors[1361]	16 NA_2 still alive	More than 6 mos.
Nishizuka, Y., et al., 1955	35 mice	NA_2		Administered in soln. in oil or as pellets for over 6 mos.	S.C	Tumors[1363]	24 were still surviving at time paper was written.	At least 6 mos.
Nishizuka, Y., et al., 1955	12 mice	Hybrid		Administered in soln. in oil or as pellets for over 6 mos.	S.C	Tumors[1364]		At least 6 mos.
Yujii, Y., et al., 1956	Mice	NA_2		1 time every 2 or 3 wks	S.C. back	Tumors[1362]		At least 13 mos.
Tsujii, Y., Folia endocrinol. Japan. *33*(1): 53–83, 1957.	159 mice	NA_2 Hybrid C3H.	Normal & cast.	30 g. in olive oil or 2–3 mg. pellets 2 times wkly.	S.C	10[5421]		At least 395 d.
390. 2-METHYL-4-ACETYLAMINOBIPHENYL 								
Miller et al., 1956	8 rats	Albino	M	1.62 mM/kg. diet	P.O	0	8 at 8 mos	10 mos.
Miller et al., 1956	9 rats	Albino	F	1.62 mM/kg. diet	P.O	0	9 at 8 mos.	10 mos.

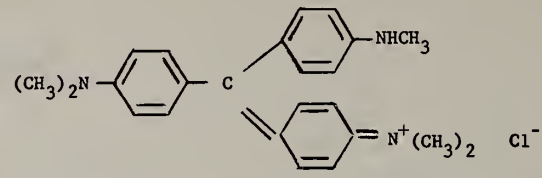
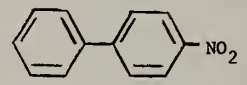
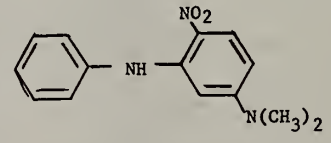
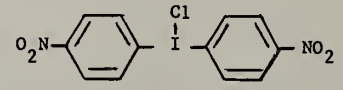
[1361] 5 NA_2 and 2 hybrids developed lymphatic leukemia and lymphosarcomas.
[1362] 7 lymphomas.
[1363] 5 with lymphatic leukemia and lymphosarcomas.
[1364] 2 with lymphosarcomas.
[5421] Lymphatic leukemia and lymphosarcoma.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
391. 2′-METHYL-4-ACETYLAMINOBIPHENYL 								
Miller et al., 1956	9 rats	Albino	M	1.62 mM/kg. diet	P.O	0	9 at 8 mos	10 mos.
Miller et al., 1956	9 rats	Albino	F	1.62 mM/kg. diet	P.O	0	9 at 8 mos	10 mos.
392. 2-METHYL-4-AMINODIPHENYL 								
Walpole, A. L., et al., 1954	24 rats	Wistar	M	2.5 g./kg. total dose	S.C	0		At least 422 d.
393. 3-METHYL-4-AMINODIPHENYL 								
Walpole, A. L., et al., 1954	22 rats	Wistar	M	1.6 g./kg. total dose	S.C	Tumors[1365]		Up to 300 d.
394. METHYL 3-HYDROXYANTHRANILATE 								
Allen, M. J., et al., 1957	20 mice			1 part/4 parts cholesterol in 9–11 mg. pellet implant.	Urinary bladder	0[1330,1366]	9 at 52 wks	52 wks.

[1330] 1/24 cholesterol controls with urinary cystic carcinoma.
[1365] 12 enteric, 3 otic and 2 leukemia. S.C. arachis oil controls developed tumors; reported elsewhere.
[1366] 2 with urinary cystic carcinoma.

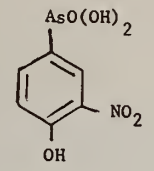
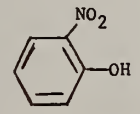
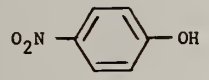
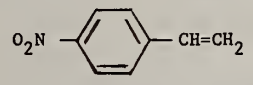
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
395. METHYLENE DISALICYLIC ACID 								
Radomski, J. L., et al., 1954	20 rats		M & F	0.1 or 0.5% in the diet for 3 mos	P.O	0		3 mos.
396. α-METHYLSTILBENE 								
Green, M. N., et al., 1954	Dogs		M & F	200 mg. inj. 5 times a wk	S.C	0[1367]		9 mos.
Green, M. N., et al., 1954	Rabbits			40 or 80 mg. inj. 5 times wkly., up to 4800 mg.	S.C	0[1367]		12 wks.
397. α-METHYL STYRENE 								
Wolf, M. A., et al., 1956	Rats	White	M & F	Avg. conc. of 2.90 mg./l. vapor for (149) 7 hr. exposures.	Inhalation	0		212 d.
Wolf, M. A., et al., 1956	Rats	White	M & F	Avg. conc. of 0.97 mg./l. vapor for (139) 7 hr. exposures.	Inhalation	0		197 d.
Wolf, M. A., et al., 1956	Guinea pigs	Albino	M & F	Avg. conc. of 3.86 mg./l. vapor for (27) 7 hr. exposures.	Inhalation	0		38 d.
Wolf, M. A., et al., 1956	Guinea pigs	Albino	M & F	Avg. conc. of 2.90 mg./l. vapor for (144) 7 hr. exposures.	Inhalation	0		212 d.
Wolf, M. A., et al., 1956	Guinea pigs	Albino	M & F	Avg. conc. of 0.97 mg./l. vapor for (139) 7 hr. exposures.	Inhalation	0		197 d.
Wolf, M. A., et al., 1956	Rabbits		M & F	Avg. conc. of 2.90 mg./l. vapor for (152) 7 hr. exposures.	Inhalation	0	Slight mortality	212 d.
Wolf, M. A., et al., 1956	Rabbits		M & F	Avg. conc. of 0.97 mg./l. vapor for (139) 7 hr. exposures.	Inhalation	0		197 d.
Wolf, M. A., et al., 1956	Monkeys	Rhesus	F	Avg. conc. of 2.90 mg./l. vapor for (149) 7 hr. exposures.	Inhalation	0		212 d.
Wolf, M. A., et al., 1956	Monekys	Rhesus	M & F	Avg. conc. of 0.97 mg./l. vapor for (139) 7 hr. exposures.	Inhalation	0		197 d.
Wolf, M. A., et al., 1956	Rats	White	M & F	Avg. conc. of 3.86 mg./l. vapor for (28) 7 hr. exposures.	Inhalation	0		38 d.

[1367] Diabetes study: No pathology report.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
398. METHYL VIOLET 								
Schaeppi, H. U., 1955	11 rats (6 mos. old).	Albino		1 ml. (2% aq. soln.), 1 ml. (1% aq. soln.) one mo. later, total dose 30 mg.	S.C	0		8 mos.
399. p-NITROBIPHENYL 								
Deichmann, W. B., et al., 1958.	4 dogs	Mongrel	F	0.3 g. in capsule thrice wkly., Mon., Wed. & Fri.	P.O	3[1368]	100%	33 mos.
Coplan, M. M., 1960	4 dogs	Mongrel	F	0.3 g. in capsule three d./wk. (Mon., Wed. & Fri.), total dose 92.2 in 1 & 129.3 gms. in 3 animals.	P.O	Tumors[1369]		At least 33 mos.
400. 2-NITRO-5-DIMETHYLAMINODIPHENYLAMINE 								
Miller, J. A., et al., 1957	15 adult rats	Albino, Holtzman.	M	Dissolved in corn oil, 2.67 mM/kg. of diet for 8 mos.	P.O	0	13 alive after 8 mos.	11 mos.
401. 4-NITRODIPHENYLENEIODONIUM CHLORIDE 								
Miller et al., 1955	Rats			0.40 mM/kg. of diet for 8 mos	P.O	0		At least 8 mos.

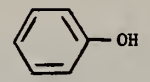
[1368] 2 urinary cystic carcinoma at 25 and 33 mos. 1 with invasive urinary cystic epithelial tumor masses at 33 mos.

[1369] Urinary cystic squamous cell carcinomas at 25–33 mos.

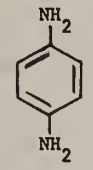
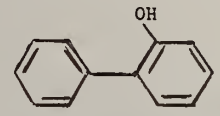
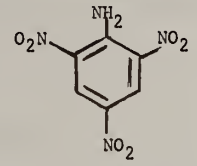
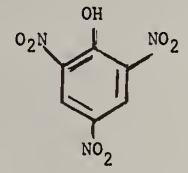
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
402. 3-NITRO-4-HYDROXYPHENYLARSONIC ACID 								
Kessler, G., et al., 1954	Rats	Sprague-Dawley.	F	0.625, 1.25, 2.50, 5.0, 10.0 or 20.0 mg.% of the diet.[1370]	P.O	0	Some groups terminated at 35 & 60 d.	Up to 78 d.
403. 2-NITROPHENOL 								
Boutwell, R. K., and Bosch, D. K., 1959.	31 mice	Sutter	F	20% soln. in dioxane given twice wkly. for 12 wks.	Skin	0	30 at 12 wks	12 wks.
404. 4-NITROPHENOL 								
Boutwell, R. K., and Bosch, D. K., 1959.	31 mice	Sutter	F	20% soln. in dioxane given twice wkly. for 12 wks.	Skin	0	30 at 12 wks	12 wks.
405. 4-NITROSTILBENE 								
Druckrey, H., et al., 1955	27 rats	BDI & Wistar		0.01% first, then 0.04% in the diet	P.O	Tumors[1371]		More than 400 d.

[1370] Natural or synthetic.

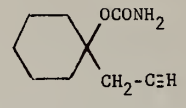
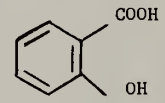
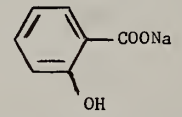
[1371] 11 with papillomas and forestomach squamous cell carcinomas (2 with otic carcinomas).

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
406. PHENOL 								
Salaman, M. H., and Glendenning, O. M., 1957.	20 mice	"S" albino	M	0.1 ml. in dist. water, 0.5% for 12 wks. & 1% for next 12 wks., given to 4 different sites, in rotation.	Intradermal inj.	0		At least 24 wks.
Salaman, M. H., and Glendenning, O. M., 1957.	20 mice	"S" albino		0.025 ml. of 20% soln. in acetone applied to 4 sites, in rotation, once a wk. for 32 wks.	Skin	Tumors[1372]	18	45 wks.
Salaman, M. H., and Glendenning, O. M., 1957.	20 mice	"S" albino		0.025 ml. of 5% soln. in acetone applied to 4 sites, in rotation, once a wk. for 32 wks.	Skin	0		45 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	30 mice	Sutter	F	10% soln. in benzene given twice wkly. for 28 wks.	Skin	Tumors[1373]	24 at 20 wks	28 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	30 mice	Sutter	F	20% soln. in dioxane given twice wkly. for 12 wks.	Skin	Tumors[1374]	16 at 12 wks	12 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	33 mice	Sutter	F	10% soln. in benzene given twice wkly. for 39 wks.	Skin	Tumors[1375]	19 at 24 wks	39 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	33 mice	Sutter	F	20% soln. in benzene given twice wkly. for 40 wks.	Skin	Tumors[1376]	20 at 24 wks	40 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	33 mice	Sutter	F	5% soln. in benzene twice wkly. for 40 wks.	Skin	Tumors[1377]	25 at 24 wks	40 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	20 mice	CAF_1	F	Multiple applications, 1 drop of 10% soln. for 1 yr.	Skin	0		1 yr.
Boutwell, R. K., and Bosch, D. K., 1959.	20 mice	C3H	F	Multiple applications of 1 drop 10% soln. for 1 yr.	Skin	0		1 yr.
Boutwell, R. K., and Bosch, D. K., 1959.	30 mice	Albino-Holtzman.	F	25 μl. of 10% soln. in benzene twice wkly. for 51 wks.	Skin	Tumors[1378]	24 at 19 wks	51 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	30 mice	Albino-Holtzman.	F	25 μl. of 5% soln. in benzene twice wkly. for 51 wks.	Skin	1 pap	30 at 19 wks	51 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	24 mice	Albino-Sutter	F	10% (2.5 mg.) soln. in benzene twice wkly. for 72 wks.	Skin	Tumors[1379]	23 at 28 wks	72 wks.

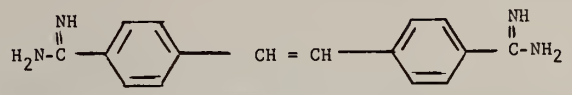
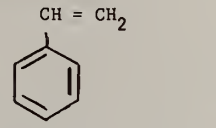
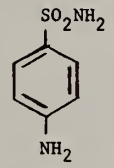
[1372] 7 papillomas; 1 subcutaneous hemangioma (relationship doubtful).
[1373] 33% with papillomas, avg. 0.62/mouse. 29% with carcinoma at 28 wks.
[1374] 63% with papillomas, avg. 0.94/mouse.
[1375] 95% with papillomas, avg. 2.68/mouse. 68% with carcinomas at 39 wks.
[1376] 90% with papillomas, avg. 2.25/mouse. 65% with carcinomas at 40 wks.
[1377] 56% with papillomas, avg. 1.16/mouse. 12% with carcinomas at 40 wks.
[1378] 25% with papillomas at 36 wks.
[1379] 5 with papillomas at 1 yr. 1 fibrosarcoma at 58 wks.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
407. p-PHENYLENEDIAMINE 								
Boutwell, R. K., and Bosch, D. K., 1959.	30 mice	Sutter	F	5% freshly prepared in acetone given twice wkly. for 20 wks.	Skin	0	19 at 20 wks	20 wks.
408. o-PHENYLPHENOL 								
Boutwell, R. K., and Bosch, D. K., 1959.	30 mice	Sutter	F	18.1% in benzene given twice wkly. for 20 wks.	Skin	Tumors[1360]	24 at 20 wks	20 wks.
409. PICRAMIDE 								
van Esch, G. J., et al., 1957	Rats	Wistar[1319]	M	500 ppm. mixed in food	P.O	0		
van Esch, G. J., et al., 1957	8 rats	Wistar[1319]	F	500 ppm. mixed in food	P.O	0[1330,1331,1332]	7 after 2 yrs	Up to 2 & 2½ yrs.
410. PICRIC ACID 								
van Esch, G. J., et al., 1957	10 rats	Wistar[1319]	F	500 ppm. mixed in food	P.O	0[1333,1331,1332]	7 after 2 yrs	Up to 2½ yrs.
van Esch, G. J., et al., 1957	Rats	Wistar[1319]	M	500 ppm. mixed in food	P.O	0		Up to 2½ yrs.

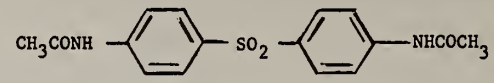
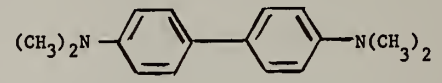
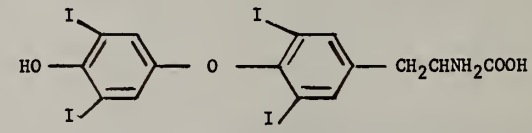
[1319] Derived from.
[1330] 4 with fibrous mammary tumors (avg. 29 mos.).
[1331] 8/19 controls developed mammary tumors (avg. 25 mos.).
[1332] Transplantation experiment negative.
[1333] 4 with fibrous mammary tumors (avg. 22 mos.).
[1360] 4% with papillomas, avg. 0.04/mouse.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
411. PROPYNYLCYCLOHEXYL CARBAMATE[2785] 								
Charlier, R., and Vandersmissen, L., 1957.	2 dogs	Terrier		10 mg./kg. daily & 30 mg./kg. daily respectively.	P.O	0	100%	6 mos.
Charlier, R., and Vandersmissen, L., 1957.	20 rats in 5 groups of 4.			1%, 0.25%, 0.125%, 0.0625% in diet for each respective group.	P.O	0	100%	6 mos., repeated for 9 mos.
Charlier, R., and Vandersmissen, L., 1957.	50 rats in 5 groups of 10.			1%, 0.5%, 0.25%, 0.125%, 0.0625% in diet for each respective group.	P.O	0	100%	3 mos.
Charlier, R., and Vandersmissen, L., 1957.	2 dogs	Terrier		10 mg./kg. & 30 mg./kg. daily respectively for 8 mos.	P.O	0	100%	9 mos.
Charlier, R., and Vandersmissen, L., 1957.	2 dogs			15 mg./kg. daily	P.O	0		3 mos.
Charlier, R., and Vandersmissen, L., 1957.	4 dogs			45 mg./kg. for 3 mos. daily	P.O	0	100%	3 for 3 mos., 1 for 4 mos.
412. SALICYLIC ACID 								
Umeda, Masao, 1957	34 rats	Mixed	M & F	5 g./kg. of rice for about 8 mos., increased to 10 g./kg. for 331 d.	P.O	0	9 survived 200 d. or more.	331 d.
Boutwell, R. K., and Bosch, D. K., 1959.	31 mice	Sutter	F	20% soln. in dioxane given twice wkly. for 12 wks.[1384]	Skin	0	100%	12 wks.
413. SODIUM SALICYLATE 								
Umeda, Masao, 1957	25 rats[119]	Albino-mixed Saitama.		2 cc. of 1.25 g./10 cc. waterly soln. once every wk. Total of 0.825–1.4 g.[1385]	S.C. inj. in back.	0[1386]	9 survived 300 d. or more.	550 d.

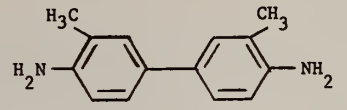
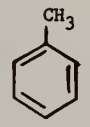
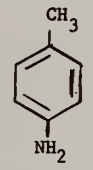
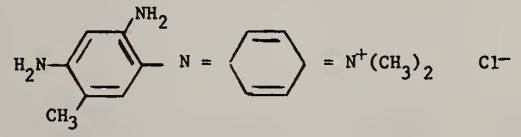
[119] Adult.
[1384] 2-hydroxybenzoic acid.
[1385] Product of Iwaki Seiyaku Co., Ltd. Tokyo.
[1386] 2 deaths at 294th and 391st day with cysticercus hepatic sarcoma. 2 with thymic hypertrophy. 1 killed on day 500 with hypophyseal hypertrophy. All presumed spontaneous.
[2785] Propinylcyclohexanol carbamate.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
414. STILBAMIDINE 								
Shimkin, M. B., 1954	30 mice[316]	Strain A	F	1 mg./0.1 cc. of water given on 3 consecutive d., 0.3 mg. repeated 3 times at 2 wks. intervals. Total dose of 1.2 mg.	I.P	Tumors[1387]	All survived inj. period.	About 37 wks.
415. STYRENE 								
Wolf, M. A., et al., 1956	Rats	White	M & F	Avg. conc. of 9.3 mg./l. vapor for (105) 7 hr. exposures.	Inhalation	0[1388]		148 d.
Wolf, M. A., et al., 1956	Rabbits		M & F	Avg. conc. of 6.0 -6.3 mg./l. vapor for (264) 7 hr. exposures.	Inhalation	0		360 d.
Wolf, M. A., et al., 1956	Monkeys	Rhesus	M & F	Avg. conc. of 6.0–6.3 mg./l. for (264) 7 hr. exposures.	Inhalation	0		360 d.
Wolf, M. A., et al., 1956	Guinea pigs	Albino	M & F	Avg. concl of 9.3 mg./l. vapor for (98) 7 hr. exposures.	Inhalation	0[1388]		148 d.
Wolf, M. A., et al., 1956	Guinea pigs	Albino	M & F	Avg. conc. of 6.0–6.3 mg./l. vapor for (139) 7 hr. exposures.	Inhalation	0[1388]		214 d.
Wolf, M. A., et al., 1956	Guinea pigs	Albino	M & F	Avg. conc. of 3.0 mg./l. vapor for (130) 7 hr. exposures.	Inhalation	0		189 d.
Wolf, M. A., et al., 1956	Rabbits		M & F	Avg. conc. of 9.3 mg./l. vapor for (126) 7 hr. exposures.	Inhalation	0		148 d.
Wolf, M. A., et al., 1956	Rats	White	M & F	Avg. conc. of 6.0–6.3 mg./l. vapor for (139) 7 hr. exposures.	Inhalation	0[1388]		214 d.
416. SULFANILAMIDE 								
Crabtree, 1956	12 rats	Wistar	M & F	Rat cube diet containing sulphanilamide at level of 0.04%.	P.O	0	Avg. survival time: 450 d.	Approximately 450 d.

[318] Virgin—age: 3 months.
[1248] Multiple papillomas at 6 mos.
[1387] 4/17 developed pulmonary tumors (0.24 tumors/mouse).
[1388] Conjunctivitis and rhinitis.

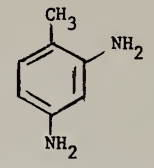
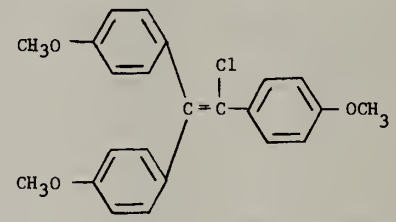
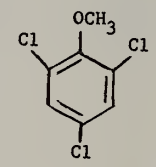
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
417. 4,4′-SULFONYLBISACETANILIDE 								
Morris, H. P., et al., 1960	18 rats[1389]	Buffalo	16 F, 2 M	0.025% in diet for 10.0–10.1 mos., avg. daily intake 2.7 mg.	P.O	Tumors[1390]	Avg. age 19.9 mos.	Up to 18 mos.
418. 4,4′-TETRAMETHYLDIAMINODIPHENYL[1391] 								
Dunn, T. B., et al., 1956	Mice	C3Hb/Hen & A		0.27% in propylene glycol in the diet.	P.O	0		
Dunn, T. B., et al., 1956	Rats	Buffalo		0.27% dissolved in propylene glycol in the diet.	P.O	0[1392]		At least 4 mos.
Morris, et al., 1957	18 rats	Buffalo	F	Carcinogen dissolved in propylene glycol & then incorporated into diet at level of 0.025% of complete diet for average of 3.2 mos.	P.O	0	Avg. age at autopsy—6.8 mos.	At least 7 mos.
419. THYROXINE 								
Gillman, J., et al., 1954	5 rats	Wister	M	Fed in Coward's diet[303]	P.O	(14)	55–79 d	79 d.
Gillman, J., et al., 1954	10 rats	Wistar	M & F	60 μg twice wkly	S.C	0	55–79 d	
Gillman, J., et al., 1954	5 rats	Wistar	F	Fed in Coward's diet[303]	P.O	(14)	56–79 d	79 d.
Ferguson, D. J., 1956	9–20 mice[1393]	C3H	F	0.5 μg in saline soln. or susp. once a d. (total vol. 0.1 ml/d.) 30–38 d. after operation, continued for 14 d.	S.C	0	All sacrificed	At least 13 mos.
Stolk, A., 1959	30 fishes	Xiphophorus helleri Heckel x Xiphophorus maculatus.	F	2 mg./kg. in normal diet	P.O	0[1394,1395]	30 at 190 d	190 d.

[14] No pathology given.
[303] Coward's diet: 71% dextrinized corn starch, 15% casein, 10% brewer's yeast, 4% slats
[1389] Avg. age: male 2 mos., females 1.9 mos.
[1390] 1 uterine adenocarcinoma. 1 mammary adenocarcinoma. 1 pancreatic fibrosarcoma. 2 leukemias. 3 pituitary adenomas.
[1391] 4,4,4′,4′-tetramethylbenzidine.
[1392] Renal glomerular lesions.
[1393] Hypophysectomized—castrated mice.
[1394] 5 with melanomas, avg. 1.2/fish.
[1395] 21/30 untreated controls with melanomas, avg. 3.1/fish. Avg. latent period 110–130 days.

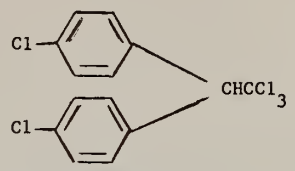
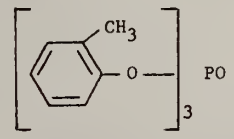
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
420. o-TOLIDINE 								
Oka, K., et al., 1957	Rats			0.5 cc. of 1% soln. once/wk	Inj	0		Prolonged period.
Ooneda, G., et al., 1957	Rats		M & F	0.5 cc. of 1% soln. in olive oil once a wk.	S.C	0		365 d.
421. TOLUENE 								
Paterni, L., et al., 1956	10 rats	Albino		1 ml./kg. body wt. in olive oil 1:1, daily.	S.C	(655)	4 alive at 30th d	Up to 51 d.
Wolf, M. A., et al., 1956	Rats	White	M & F	118, 354 or 590 mg./kg./d. in 2–3 ml. olive oil soln. emulsified with 5–10% aqueous soln. of acacia for 138 feedings.	P.O., stomach tube.	0		193 d.
422. p-TOLUIDINE 								
Boutwell, R. K., and Bosch, D. K., 1959.	32 mice	Sutter	F	20% soln. in dioxane given twice wkly. for 12 wks.	Skin	0	27 at 12 wks	12 wks.
423. TOLUYLENE BLUE 								
Umeda, M., 1954	15 rats	Wistar		1 cc. of 1 g./10 cc. 1–2 times a wk. for 3 wks., then 1 cc of ½ g./10 cc. 1–2 times a wk. for about 11 mos.	S.C	Tumors[1396]	6 survived more than 324 d.	11 mos.

[655] Hematology and histology study.

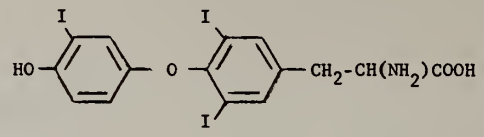
[1396] 1 male with rhabdomyosarcoma.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
424. m-TOLUYLENEDIAMINE[796] 								
Umeda, Masao. 1955	20 rats	Mixed	M & F	Dissolved in propylene glycol at conc. of 0.4% given in 0.5 cc. amts. once every wk., for 246 d.[1397]	S.C. inj. in back at same site.	Tumors[1398]	9 survived from 297–452 d., 11 died within 8 mos.	452 d.
Umeda, M., 1956	Rats			0.5 cc. of 0.4% soln. in propylene glycol once a wk.	S.C.	Tumors[1399]	9 at 8 mos	At least 8 mos.
Umeda, M., 1956	30 mice			0.1 cc. of 0.4% soln. in propylene glycol once a wk.	S.C.	0	3 at 200 d	At least 200 d.
425. TRI-p-ANISYLCHLOROETHYLENE 								
Clifton, K. H., and Meyer, R. K., 1956.	Rats	Holtzman	M	2.0 mg./0.1 ml. in corn oil every 2nd d. for 22 d., 3.0 mg./0.15 ml. in corn oil every 2nd d. for 12 d., 4.0 mg./0.2 ml. in corn oil every 2nd d. up to 71st d.	Inj	0	Killed at intervals from 60th d.	At least 71 d.
426. 2,4,6-TRICHLOROANISOLE[1400] 								
Wolf, M. A., et al., 1956	Rats	White	M & F	66.7, 133, 400, 667, or 600 mg./kg./d. in 2–3 ml. olive oil soln. emulsified with 5–10% aqueous soln. of acacia for 132 feedings.	P.O., stomach tube.	0		185 d.

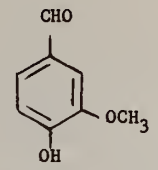
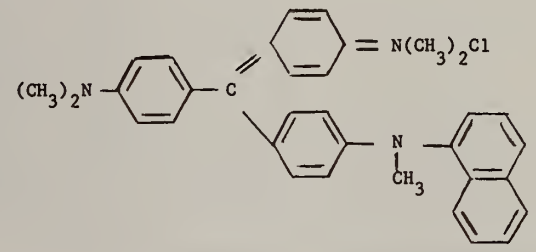
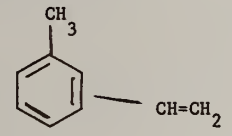
[796] Product of highest purity.
[1397] Prepared and sterilized before each injection.
[1398] 9/9 survivors developed injection site sarcomas (no macroscopic metastases).
[1399] 9 with sarcoma.
[1400] Tyrene.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
427. 1,1,1-TRICHLORO 2,2-BIS (p-CHLOROPHENYL) ETHANE 								
Solarino, G., and Tripodo, C., 1954.	18 rabbits			100 mg./kg. body wt. in 10% soln. in oil, daily for 30 d.	I.M.	[1401]		At least 130 d.
Ortega, P., et al., 1956	55 rats	Sherman white	M	50, 200, 400, 1000 ppm. in diet.[1402]	P.O.	0[1403]	Killed from 1 wk.—8 mos.	Up to 8 mos.
Ortega, P., et al., 1956	44 rats	Sherman white	22 ♂♂	5, 15, 50, 200, 400 ppm. in diet up to 6 mos.[1404]	P.O.	0	Killed at 0, 2, 4, & 6 mos., 2 died.	6 mos.
Ortega, P., et al., 1956	50 rats	Sherman white	20 F, 30 M	200 ppm. in diet for 4 mos.[1405]	P.O.	0	2 M killed at 2 mos.	4 mos.
Oretega, P., et al., 1956	68 rats	Sherman white	34 ♂♂	5, 15, 50, 200, 400 ppm. in diet for 6 mos., then normal diet up to 20 mos.[1404]	P.O.	0	Killed 0.5, 1, 2.5, 5, 8, 7, 14 mos. after feeding DDT diet.	Up to 20 mos.
Ortega, P., et al., 1956	14 rats	Sherman white	7 M, 7 F	400 ppm. in diet for 6 mos., then 15 ppm. for 14 mos.[1404]	P.O.	0	2 died after 6 mos.	20 mos.
428. TRI-o-CRESYL PHOSPHATE 								
Henschler, D., 1958	3 chickens			200 cc./kg. six d. wkly	P.O.	0		2 mos.
Henschler, D., 1958	3 chickens			100 cc./kg. six d. wkly	P.O.	0		2 mos.
Henschler, D., 1958	3 chickens (750–950 g.).			50 cc./kg. six d. wkly	P.O.	0		2 mos.
Henschler, D., 1958	3 chickens (750–950 g.).			20 cc./kg. six d. wkly	P.O.	0		2 mos.

[1401] Generalized plasmocytosis; no tumor study reported.
[1402] 97.6% pure (DDT).
[1403] Hepatic necrosis at 1,000 ppm.
[1404] 86.6% pure. (DDT).
[1405] 86.6% pure, 97.6% pure, 100% pure (DDT).

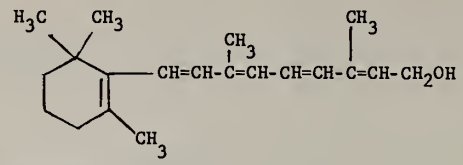
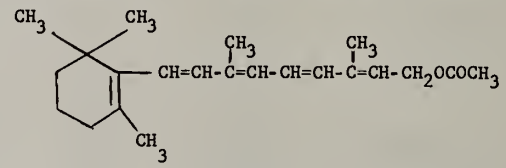
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
429. 3,3′,5-TRIIODO-L-THYRONINE 								
Michel, R., et al., 1957	Rooster (550 g.) (5–6 wks. old).	Sussex	M	20 μg/kg	S.C. daily	0		50 days.
Michel, R., et al., 1957	Rooster (550 g.) (5–6 wks. old).	Sussex	M	200 μg/kg	S.C. daily	0		50 d.
430. TRIPHENYLCYANOETHYLENE $(C_6H_5)C{=}C(CN)C_6H_5$								
Yujii, Y., et al., 1956	Mice	NA_2		Once every 2–3 wks	S.C. back	Tumors[1405]		At least 6 mos.
431. TRIPHENYLETHYLENE $(C_6H_5)_2C{=}CHC_6H_5$								
Jull, J. W., 1956	Mice[1407]	CBA	M	Fixed dose given for 12 wks		0[1408]	All sacrificed at 12 wks.	12 wks.
432. TRIPHENYL PHOSPHATE $(C_6H_5O)_3$ PO								
Hierholzer, K., et al., 1957	2 cats			125 mg./kg. in olive oil mixed with food.	P.O	0	1 died at 8th d., one at 28th.	28 d.
Hierholzer, K., et al., 1957	9 rats (80–120 g.).		M & F	1 g./kg. in olive oil mixed with the food daily.	P.O	0	8 at the end of experiment (65 d.)	9 wks.
Hierholzer, K., et al., 1957	2 cats (2.5 kg.).			5 mg./kg. body wt. in olive oil mixed with the food for 8 d.	P.O	0	1 died on 9th d	8 wks.
Hierholzer, K., 1957	2 cats (2 kg. & 2.5 kg.).			1 mg./kg. body wt. in olive oil mixed with the food for 8 d.	P.O	0	Killed at the end of experiment.	6 wks.
Hierholzer, K., et al., 1957	2 cats (2 kg.)			20 mg./kg. body wt. in olive oil with stomach tube for 22 d.	P.O	0		
Hierholzer, K., et al., 1957	2 cats (2.5 kg.).			50 mg./kg. in olive oil, stomach tube.	P.O	0	Killed at 12th d	12 d.
Hierholzer, K., et al., 1957	12 rats (80–120 g.).		M & F	1 g./kg. body wt. in olive oil, mixed with the food daily.	P.O	0	8 at the end of experiment.	3 mos.
Sutton, W. L., et al., 1960	6 cats		F	0.1, 0.2, 0.2, 0.3, 0.3 & 0.4 g./kg. in 95% ethanol once, respectively.	I.P	0	1 died at 3 d	Up to 50 d.
Sutton, W. L., et al., 1960	5 rats	Holtzman	M	0.1% in diet for 35 d	P.O	0		50 d.
Sutton, W. L., et al., 1960	5 rats	Holtzman	M	0.5% in diet for 35 d	P.O	0		50 d.

[1405] 2 lymphomas.
[1407] Castrated 2 wks. prior to treatment.
[1408] Mammary growth observed, no other details.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
433. VANILLIN 								
Salaman and Roe, 1956	20 mice	Albino "S" strain.		10 thrice wkly. applications of 20% soln. in acetone (total dose—0.6 g.)[1409].	Skin	4 (total of 7 pap.).	18 at about 28 wks.	Approx. 30 wks.
434. VICTORIA BLUE 4R 								
Kocke, H. U., 1953	21 mice (15–20 g.)	Albino		1 mg. in 4% agar (8 mm.^{3})	S.C. implant	0	3 at 4 wks	
435. VINYL TOLUENE 								
Wolf, M. A., et al., 1956	Monkeys	Rhesus	F	Avg. conc. of 2.80, 5.43 or 6.52 mg./l. vapor for (92–100) 7 hr. exposures.	Inhalation	0[14]		139 d.
Wolf, M. A., et al., 1956	Rabbits		M & F	Avg. conc. of 2.80, 5.43 or 6.52 mg./l. vapor for (92–100) 7 hr. exposures.	Inhalation	0		139 d.
Wolf, M. A., et al., 1956	Guinea pigs.	Albino	M & F	Avg. conc. of 2.80, 5.43 or 6.52 mg./l. vapor for (92–100) 7 hr. exposures.	Inhalation	0[14]		139 d.
Wolf, M. A., et al., 1956	Rats	White	M & F	Avg. conc. of 2.80, 5.43 or 6.52 mg./l. vapor for (92–100) 7 hr. exposures.	Inhalation	0		139 d.

[14] No pathology given.

[1409] Weekly croton oil in acetone applications (2 of 0.086%, 16 of 0.17%) begun 25 days post-treatment.

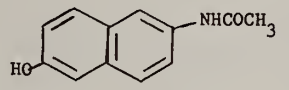
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
436. VITAMIN A 								
Bern, Howard A., et al., 1955	3 rats	Long-Evans	M	Daily inj. of 1000 units Vit. A alcohol into pad of 0.3 ml. sesame oil or in 0.3 ml. sesame oil containing Vit. A alcohol for 60 d.[1410]	S.C., into dorsal area between scapulae.	(1411)	All killed at end of experiment.	60 d.
Bern, Howard A., et al., 1955	3 rats	Long-Evans	M	Daily inj. of 1000 units Vit. A alcohol into pad of 0.3 ml. sesame oil or 0.3 ml. sesame oil containing Vit. A alcohol for 30 d.[1410]	S.C., dorsal area between scapulae.	(1411)	All killed at end of experiment.	30 d.
Bern, Howard A., et al., 1955	4 rats	Long-Evans	M	Daily inj. into pad of 0.3 ml. sesame oil or 0.3 ml. sesame oil containing 1000 units Vit. A alcohol for 30 d.[1410]	Topical application, dorsal area between scapulae.	(1412)	All killed at end of experiment.	30 d.
Bern, Howard A., et al., 1955	5 rats	Long-Evans	M	Daily inj. into pad of 0.3 ml. sesame oil or 0.3 ml. sesame oil containing 1000 units for 60d.[1410]	Topical application, dorsal area between scapulae.	(1413)	All killed at end of experiment.	60 d.
437. VITAMIN A ACETATE 								
Gillman, J., et al., 1954	15 rats	Wistar	F	Dissolved in ethanol, diluted with dist. water & given in 8–100 units/wk. once a wk., incorporated in Coward's diet,[303] given after a period of Vit. A depletion.	P.O	0	144–363 d	363 d.
Gillman, J., et al., 1954	13 rats	Wistar	M	Dissolved in ethanol, diluted with dist. water & given in 20–40 units/wk. once a wk., incorporated in Coward's diet,[303] given after a period of Vit. A depletion.	P.O	0	308–430 d	430 d.

[303] Coward's diet: 71% dextrinized corn starch, 15% casein, 10% brewer's yeast, 4% salts.
[1410] Felt pads used to avoid contamination.
[1411] No effect on the overlying epidermis.
[1412] Acanthosis; no "adaptation" to effects of vitamin.
[1413] Acanthosis; no "adaptation" to effects of vitamin. Parakeratotic areas noted.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
437. VITAMIN A ACETATE (Continued)								
Gillman, J., et al., 1954	15 rats	Wistar	F	Dissolved in ethanol, diluted with dist. water & given in 4–60 units/wk. once a wk., incorporated in Coward's diet,[303] given after a period of Vit. A depletion.	P.O	0	88–281 d	281 d.
Gillman, J., et al., 1954	17 rats	Wistar	M	Dissolved in ethanol, diluted with dist. water & given in 8–100 units/wk., once a wk., incorporated in Coward's diet,[303]; given after a period of Vit. A depletion.	P.O	0	140–345 d	345 d.
Gillman, J., et al., 1954	12 rats	Wistar	M	Dissolved in ethanol, diluted with dist. water & given in 4–60 units/wk. once a wk., incorporated in Coward's diet.,[303]; given after a period of Vit. A depletion.	P.O	0	114–275 d	275 d.
Gillman, J., et al., 1954	14 rats	Wistar	F	Dissolved in ethanol, diluted with dist. water & given in 20–40 units/wk. once a wk., incorporated in Coward's diet,[303] given after a period of Vit. A depletion.	P.O	0	368–527 d	527 d.

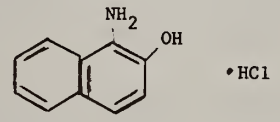
B. ORGANIC COMPOUNDS—3. BICYCLIC

438. 2-ACETAMIDO-6-NAPHTHOL



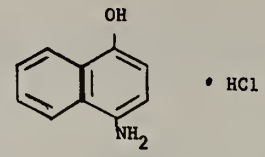
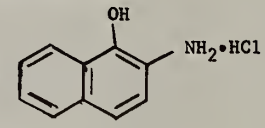
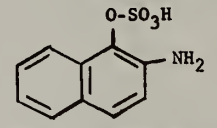
Allen, M. J., et al., 1957	19 mice			1 part/4 parts paraffin wax in 8–12 mg. pellet implant.	Urinary bladder	0	10 at 40 wks	At least 40 wks.

439. 1-AMINO-2-NAPHTHOL HYDROCHLORIDE

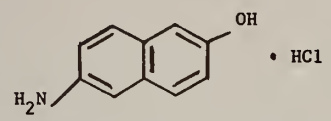
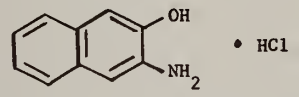
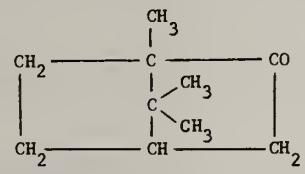
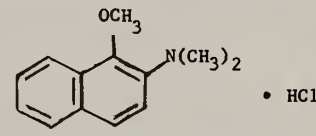


Bonser et al., 1956	36 mice	Albino		Paraffin wax pellet.[1414]	Implantation into the lumen of the bladder.	Tumors[1415]	3 killed before 35 wks.	40 wks.

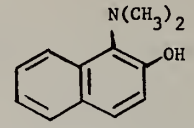
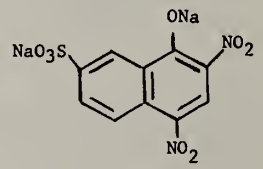
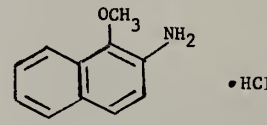
[303] Coward's diet: 71% dextrinized corn starch, 15% casein, 10% brewer's yeast, 4% salts.
[1414] Dosage not specified.
[1415] 8 benign urinary cystic tumors. 10 carcinomas (3 invasive).

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
440. 1-AMINO-4-NAPHTHOL HYDROCHLORIDE 								
Clayson, D. B., et al., 1958	39 mice	Albino		12.5% in compressed cholesterol pellet.	Implanted into the lumen of bladder.	0[1416,1417]	1 killed after 25 wks.	40 wks.
441. 2-AMINO-1-NAPHTHOL HYDROCHLORIDE 								
Bonser et al., 1956	118 mice	Albino		Paraffin wax pellet.[1414]	Implanation into the lumen of the bladder.	Tumors[1418]	15 killed before 35 wks.	40 wks.
Boyland, E., and Watson, G., 1956.	25 mice			20% in cholesterol pellet	Bladder implant, lumen of bladder tied off.	Tumors[1419, 1420].	13 at 40 wks	40 wks.
Allen, M. J., et al., 1957	25 mice			1 part/4 parts cholesterol in 9–11 mg. pellet implant.	Urinary bladder	Tumors[1421, 1422].	13 at 40 wks.	At least 40 wks.
442. 2-AMINO-1-NAPHTHYL HYDROGEN SULFATE 								
Clayson, D. B., et al., 1958	26 mice	Albino		12.5% in compressed cholesterol pellet.	Implanted into the lumen of the bladder.	0[1417,1423]	2 killed before 35 wks.	40 wks.
Bonser et al., 1956	38 mice	Albino		Paraffin wax pellet.[1414]	Implanation into the lumen of the bladder.	Tumors[1424]	4 killed before 35 wks.	40 wks.

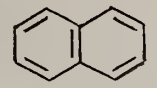
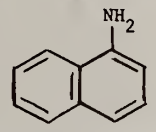
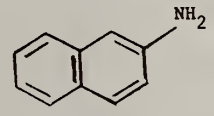
[1414] Dosage not specified.
[1416] 3 carcinomas (1 invasive, 2 noninvasive). 5 benign urinary cystic tumors.
[1417] 5/55 cholesterol controls developed 5 noninvasive carcinomas.
[1418] 8 benign urinary cystic tumors; 20 carcinomas (11 invasive).
[1419] 1 urinary cystic carcinoma, 2 papillomas.
[1420] 25 cholesterol controls negative.
[1421] 1 urinary cystic papilloma (adenoma).
[1422] 1/24 cholesterol controls with urinary cystic carcinoma.
[1423] 5 carcinomas (2 invasive, 3 noninvasive). 5 benign urinary cystic tumors.
[1424] 3 benign urinary cystic tumors; 2 carcinomas (1 invasive).

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
443. 2-AMINO-6-NAPHTHOL HYDROCHLORIDE 								
Allen, M. J., et al., 1957	20 mice			1 part/4 parts paraffin wax in 8–12 mg. pellet implant.	Urinary bladder	Tumors[1421, 1425]	4 at 52 wks.	52 wks.
444. 3-AMINO-2-NAPHTHOL HYDROCHLORIDE 								
Clayson, D. B., et al., 1958	33 mice	Albino		12.5% in compressed paraffin wax pellet.	Implanted into the lumen of bladder.	0[1426,1427]	2 killed after 31 wks., 4 after 35 wks.	40 wks.
445. CAMPHOR 								
Graffi, A., et al., 1953	110 mice		M	3 drops 0.3–3% in acetone once wkly. followed by 1 drop 5% croton oil once wkly.	Skin	Tumors[1428]	2 at 12th mo	12 mos.
446. 2-DIMETHYLAMINO-1-METHOXYNAPHTHALENE HYDROCHLORIDE 								
Bonser et al., 1956	33 mice	Albino		Paraffin wax pellet.[1414]	Implantation into the lumen of the bladder.	Tumors[1429]	8 killed before 35 wks.	40 wks.

[1414] Dosage not specified.
[1421] 1 urinary cystic papilloma (adenoma).
[1425] Paraffin controls negative.
[1426] 2 carcinomas, (1 invasive, 1 noninvasive).
[1427] 56 paraffin controls developed 2 carcinomas, (1 invasive, 1 noninvasive).
[1428] 2 papillomas.
[1429] 6 benign urinary cystic tumors. 2 carcinomas (1 invasive).

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
447. 1-DIMETHYLAMINO-2-NAPHTHOL 								
Allen, M. J., et al., 1957	20 mice			1 part/4 parts cholesterol in 9–11 mg. pellet implant.	Urinary bladder	0[1422,1430]	11 at 40 wks.	At least 40 wks.
448. FD & C YELLOW NO. 1 								
Nelson, A. A.,	Rats			1 or 2% in food	P.O	0[1431]	All died within 1 yr.	Up to 1 yr.
Klinke, unpublished data[1432]	85 rats			10–15 mg. as 0.1% in food for duration.	P.O	0		200 d.
449. 1-METHOXY-2-NAPHTHYLAMINE HYDROCHLORIDE 								
Bonser, et al., 1956	15 mice	Stock albino	F	0.1 cc. of 3% soln. in water, twice wkly. for 52 wks. (Total dose per mouse, 312 mg.).	S.C	Tumors[1433]	10 alive at 20 wks.	70–89 wks.
Bonser, et al., 1956	15 mice	Stock albino	M	0.1 cc. of 3% soln. in water, twice wkly. for 52 wks. (Total dose per mouse, 312 mg.).	S.C	Tumors[1434]	8 alive at 20 wks.	70–89 wks.
Clayson, D. B., et al., 1958	11 mice	Albino		12.5% in compressed paraffin wax pellet.	Implanted into the lumen of the bladder.	Tumors[1427, 1435]	3 killed after 25 wks., 4 after 35 wks.	40 wks.
Clayson, D. B., et al., 1958	31 mice	Albino		12.5% in compressed cholesterol pellet.	Implanted into the lumen of bladder.	Tumors[1417, 1436]	1 killed after 25 wks.	40 wks.

[1417] 5/55 cholesterol controls developed 5 noninvasive carcinomas.
[1422] 1/24 cholesterol controls with urinary cystic carcinoma.
[1427] 56 paraffin controls developed 2 carcinomas, (1 invasive, 1 noninvasive).
[1430] 2 urinary cystic tumors (1 papilloma (adenoma), 1 carcinoma).
[1431] Diffuse calco-colic ulceration.
[1432] Recorded in Toxikologische Daten, etc., 6: 1957.
[1433] 6 lymphomas, 2 benign enteric polyps.
[1434] 5 lymphomas, 2 hepatomas, 1 cholangioma, 5 benign enteric polyps.
[1435] 4 carcinomas (1 invasive, 3 noninvasive). 1 benign urinary cystic tumor.
[1436] 13 carcinomas (7 invasive, 6 noninvasive), 1 benign urinary cystic tumor.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
450. NAPHTHALENE[1280] 								
Schmähl, D., 1955	10 rats (100 d. old).	BDI, BDIII		2% in oil, 20 mg. once a wk. for 40 wks. or until a total dose of 820 mg.	S.C	0	700 d	More than 1000 d.
Schmähl, D., 1955	28 rats (100 d. old).	BDI, BDII		In oil (in synthetic diet) 6 times a wk., 10–20 mg. until total dose of 10 g./rat in 700 d.	P.O	0	800 d	More than 1000 d.
Schmähl, D., 1955	10 rats (100 d. old).	BDI, BDIII		2% in oil, 20 mg. once a wk. for 40 wks. or until a total dose of 820 mg.	I.P	0	900 d	More than 1000 d.
Knake, E., 1956	38 rats			15% in sesame oil, 50 mg. naphthalene/100 g. body wt., 7 inj. at 14 d. intervals.	S.C	Tumors[1437]	34 at 3½ mos., 21 at 6 mos., 10 at 9 mos.	17 mos.
Knake, E., 1956	25 mice	SW		0.5% in benzene 6 d./wk. for 3 wks. then 2 a wk.	Skin	Tumors[1438]	14 at 12 mos., 5 at 21 mos.	27 mos.
451. α-NAPHTHYLAMINE 								
Bonser, et al., 1956	15 mice	Stock albino	M	0.1 cc. of 3% susp. in arachis oil, twice wkly. for 52 wks. (Total dose per mouse, 312 mg.).	S.C	1 (lymphoma).	5 alive at 20 wks	70–89 wks.
Bonser, et al., 1956	15 mice	Stock albino	F	0.1 cc. of 3% susp. in arachis oil, twice wkly. for 52 wks.(Total dose per mouse, 312 mg.).	S.C	7[1439]	12 alive at 20 wks	More than 90 wks.
452. β-NAPHTHYLAMINE 								
Scott, W. W., and Boyd, H. L., 1953.	9 dogs[1440]		8 F & 1 M	300 mg. capsule mixed into food daily for 24–35 mos.	P.O	Tumors[1441]	4 at 33 mos	36 mos.
Boyland, E., et al., 1954	11 rats	Wistar	F	0.067% in the diet throughout experiment.[1442]	P.O	Tumors[1443]	5 died by 662 d	943 d.

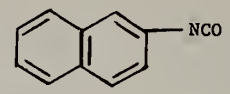
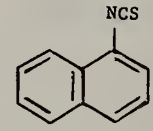
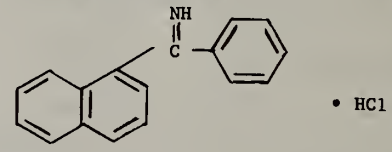
[1280] Reagent grade.
[1437] 5 sarcomas.
[1438] 1 thymic sarcoma, 4 leukemia, 3 pulmonary adenoma, 1 hypernephroma.
[1439] 6 lymphomas, 1 benign enteric polyp.
[1440] 3 intact, 2 ureterosigmoidostomized, 4 with isolated sigmoid loop-bladder.
[1441] 5 (intact and 2 ureterosigmoidostomized), 4 with urinary cystic papillary and squamous cell carcinoma. 2 (isolated sigmoid loop-bladder) developed ureteral carcinoma.
[1442] Casein hydrolysate-tryptophan diet.
[1443] 4 hepatomas, 1 bronchogenic carcinoma, 1 subcutaneous fibroma.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
452. β-NAPHTHYLAMINE (Continued)								
Boyland, E., et al., 1954	10 rats	Wistar	F	0.067% in the diet throughout experiment.[1444]	P.O	Tumors[1445]	6 died by 735 d	925 d.
McDonald, D. F., and Lund, R. R., 1954.	10 dogs[1446]	Young, mongrel	F	600 mg. capsule daily. Doses varied up to 17 mos.	P.O	Tumors[1447]	All sacrificed	2 yrs.
McDonald, D. F., and Lund, R. R., 1954.	29 adult rabbits[1445].		M	0.1% soln.[1448,1449] for 2 yrs. Avg. daily intake 350 mg.	P.O	Tumors[1450]	All sacrificed	2 yrs.
Bonser, G. M., et al., 1954	2 dogs	1 Spaniel & 1 black mongrel.	F	5 cc. of a 3% soln. in arachis oil, wkly. for 17–18 mos.	Intravesically (using catheter).	0[1451]	First died at 17 mos.	28 mos.
Bonser, et al., 1956	45 mice	Stock albino	M	0.1 cc. of 3% susp. in arachis oil, twice wkly. for 52 wks. (Total dose per mouse, 312 mg.).	S.C	8[1452]	21 at 20 wks	More than 90 wks.
Bonser, et al., 1956	45 mice	Stock albino	F	0.1 cc. of 3% susp. in arachis oil, twice wkly. for 52 wks. (Total dose per mouse, 312 mg.).	S.C	17[1453]	20 alive at 20 wks	More than 90 wks.
Bonser et al., 1956	9 mice[1454]	Swiss	F	0.1 ml. of 3% soln. in arachis oil twice wkly. for 50 wks.[1455]	S.C	Tumors[1456]	4 at 51 wks	More than 80 wks.
Bonser et al., 1956	7 mice[1454]	Swiss	M	0.1 ml. of 3% soln. in arachis oil twice wkly. for 50 wks.[1455]	S.C	Tumors[1457]	2 at 51 wks	More than 80 wks.
Bonser et al., 1956	89 mice	Albino		Paraffin wax pellet.[851]	Implantation into the lumen of the bladder.	Tumors[1458]	19 killed before 35 wks.	40 wks.
Bonser et al., 1956	8 mice[1454]	Swiss	M	0.1 ml. of 3% soln. in arachis oil twice wkly. for 50 wks.[1459]	S.C	0	5 at 41 wks	Approx. 70 wks.
Bonser et al., 1956	4 dogs		F	200 mg. in gelatin capsule 6 d./wk.[1460]	P.O	2[1461]	2 dead before 2 yrs.	3 yrs.
Bonser et al., 1956	5 mice[1454]	Swiss	F	0.1 ml. of 3% soln. in arachis oil twice wkly. for 50 wks.[1459]	S.C	2 (hepatomas).	4 at 71 wks	More than 80 wks.
Bonser, et al., 1956	7 mice[1454]	Swiss	M	0.1 ml. of 3% soln. in arachis oil twice wkly. for 50 wks.[1459]	S.C	Tumors[1462]	4 at 51 wks	Approx. 70 wks.
Bonser, et al., 1956	5 mice[1454]	Swiss	F	0.1 ml. of 3% soln. in arachis oil twice wkly. for 50 wks.[1459]	S.C	1 (sarcoma)[1463].	3 at 51 wks	Approx. 70 wks.

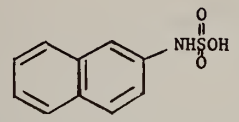
[851] Dose not specified.
[1444] With Casein.
[1445] 1 urinary cystic papilloma, 1 hepatoma, 1 bronchogenic carcinoma, 1 pulmonary carcinoma.
[1446] Cystoplasty (50% bladder porich isolated from urine contact).
[1447] 32 urinary cystic epithelial tumors, (papillary tumors, transitional cell carcinomas, and squamous cell carcinomas) developed in urine contact areas of 10 animals. Induction period avg. 12¾ months. 1 renal tubular adenoma. 1 renal transitional cell carcinoma.
[1448] Prepared daily.
[1449] Hydrochloride.
[1450] 1 leukemia after 9 months (possibly unrelated; rare). 2 hepatic adenomatous bileduct proliferations (possibly spontaneous).
[1451] Survival time insufficient for tumor development.
[1452] 5 S.C. sarcomas, 3 lymphomas.
[1453] 7 S.C. sarcomas, 8 lymphomas, 1 enteric carcinoma, 1 benign enteric polyp.
[1454] Age at start: 12 wks.
[1455] Solution standing 4 wks. prior to injection.
[1456] 6 injection site S.C. sarcomas, 2 hepatomas.
[1457] 4 injection site S.C. sarcomas, 2 hepatomas.
[1458] 8 benign urinary cystic tumors and 8 carcinomas (4 invasive).
[1459] Fresh solution.
[1460] Increased after 6 mos. to 600 mg.; max. cumulative dose 310 gram/animal.
[1461] Multiple urinary cystic transitional cell tumors (papillomas and carcinomas).
[1462] 1 injection site sarcoma, 1 hepatoma.
[1463] Injection site.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
452. β-NAPHTHYLAMINE								
Bonser, et al., 1956	11 mice[1454]	CBA	9 M & 2 F	0.1 ml. of 3% aqueous soln.[1449,1459] twice wkly. for 6 mos. & once wkly. for the next 4 mo.	S.C	4 (hepatomas).	10 at 61 wks	More than 80 wks.
Bonser et al., 1956	10 mice[1454]	CBA	9 M & 1 F	0.1 ml. of 3% aqueous soln.,[1449,1459] twice wkly. for 6 mos. & once wkly. for the next 4 mo.	S.C	2 (hepatomas).	5 at 81 wks	More than 93 wks.
Marshall, V. F., et al., 1956	3 adult dogs	Mongrel	M	500 mg. daily for duration of experiment.[1464]	P.O	1[1465]	First died at 13 mos.	Approx. 18 mos.
Marshall, V. F., et al., 1956	7 adult dogs	Mongrel	F	500 mg. daily for duration of experiment.[1464]	P.O	2[1466]	3 alive at 3 mos	Approx. 26 mos.
Marshall, V. F., et al., 1956	3 adult dogs	Mongrel	M	500 mg. daily for duration of experiment.[1467]	P.O	3[1468]	1 alive at 25 mos	Approx. 35 mos.
Marshall, V. F., et al., 1956	5 adult dogs	Mongrel	F	500 mg. daily for duration of experiment.[1467]	P.O	3[1469]	2 early deaths (before 7 mos.).	Approx. 34 mos.
Marshall, V. F., et al., 1956	6 adult dogs.[1470]	Mongrel	M	500 mg. daily for duration of experiment.	P.O	1[1471]	3 alive at 8 mos	Approx. 34 mos.
Marshall, V. F., et al., 1956	3 adult dogs[1472]	Mongrel	F	500 mg. daily for duration of experiment.	P.O	3[1473]	First died at approx. 27 mos.	Approx. 31 mos.
Marshall, V. F., et al., 1956	3 adult dogs	Mongrel	2 M, 1 F	30 mg. daily for duration of experiment.	P.O	1[1474]	1 early death (6 mos.).	More than 24 mos.
Marshall, V. F., et al., 1956	2 adult dogs	Mongrel	1 M, 1 F	90 mg. daily for duration of experiment.	P.O	2[1475]		More than 29 mos.
Marshall, V. F., et al., 1956	2 adult dogs	Mongrel	1 M, 1 F	60 mg. daily for duration of experiment.	P.O	1[1476]	First died at 21 mos.	More than 29 mos.
Marshall, V. F., et al., 1956	2 adult dogs	Mongrel	1 M, 1 F	120 mg. daily for duration of experiment.	P.O	2[1477]		More than 22 mos.
Marshall, V. F., et al., 1956	3 adult dogs	Mongrel	M	500 mg. daily for duration of experiment.	P.O	2[1478]	First died at 17 mos.	Approx. 29 mos.
Marshall, V. F., et al., 1956	3 adult dogs	Mongrel	F	500 mg. daily for duration of experiment.	P.O	3[1479]	First died at approx. 24 mos.	Approx. 30 mos.
Kakuya, H., J. Nippon Med. Sch. *26*, 513–528 (1959).	5 dogs	Mongrel	F	300 mg. per d. in food	P.O	Tumors[5422]		372 d.
Saffiotti, U., 1960	25 mice	Swiss	F	0.1% in the diet for 1 mo	P.O	0	24 at 30 wks	30 wks.

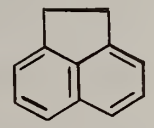
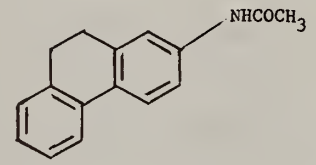
[1449] Hydrochloride.
[1454] Age at start: 12 wks.
[1459] Fresh solution.
[1464] S.C. implant (1–2 25 mg. pellets) crystalling estradiol initially, and at 6 mo. intervals.
[1465] 1 urinary cystic papillary carcinoma at 18 months. Death at 13 mos. with ulcerative cystitis.
[1466] 2 urinary cystic carcinomas at 17 and 17½ months. Death at 20 mos. with ulcerative cystitis.
[1467] S.C. implantations (2 75 mg. pellets testosterone) initially and at 2–3 mo. intervals.
[1468] Urinary cystic carcinomas, first at 18 months, last at 34 months.
[1469] Urinary cystic carcinomas at 24 months.
[1470] Castrated prior to treatment.
[1471] Urinary cystic carcinoma, at 26 months. Death at 14 mos. with ulcerative cystitis.
[1472] Spayed prior to treatment.
[1473] Urinary cystic carcinoma at 17 mos.
[1474] 1 female with urinary cystic carcinoma at 24 mos. 1 male died at 16 mos. with ulcerative cystitis.
[1475] 1 male with urinary cystic carcinoma at 18 mos. 1 female at 29 mos.
[1476] Female with urinary cystic carcinoma at 29 mos. Male died at 21 mos. with ulcerative cystitis.
[1477] Male with urinary cystic carcinoma, at 18 mos.; female at 22 mos.
[1478] Urinary cystic carcinoma at 17½ and 19 mos. 1 death at 17 mos. with cystitis.
[1479] Urinary cystic carcinoma, at 13–20 mos.
[5422] Vaginal and urinary cystic sarcoma-like lesions. Controls comparable.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
453. β-NAPHTHYL ISOCYANATE 								
Mazzanti, L., 1955	4 guinea pigs.		3 M & 1 F	200 mg./kg. body wt. daily for 19 d., 13 d. interval & then for 14 d. every second d.		(1480)		52 d.
454. α-NAPHTHYL ISOTHIOCYANATE 								
Lopez, M., and Mazzanti, L., 1955.	50 rats	Italico	M	Dissolved in olive oil, 1 g./kg. of diet.	P.O	0[1481]	Killed from 15 d.—7 mos.	7 mos.
McLean, M. R., and Rees, K. R., 1958.	Rats	Norwegian hooded.		1 g. dissolved in olive oil/kg. powder diet for 18 mos.	P.O	0[1482]		18 mos.
McLean, M. R., and Rees, K. R., 1958.	Rats[1483]	Albino		1 g. dissolved in olive oil/kg. powder diet for over 6 wks.	P.O	0[1482]	2 killed at 2,4, 6 wks.	Over 6 wks.
McLean, M. R., and Rees, K. R., 1958.	Rats	Albino	M & F	1 g. dissolved in olive oil/kg powder diet.	P.O	0[1482]	Killed at intervals from 1–32 wks.	32 wks.
Cameron, G. R., et al., 1960	30 rats	Wistar albino	M	1 g./kg. food for 35 wks., normal diet thereafter.	P.O	0[1484]	100% at 35 wks. killed at intervals from 3–95 d. thereafter.	340 d.
Sutton, P. M., 1960	Rats	Wistar albino			P.O	0[1485]	Killed at 6, 11, 16, 26 and 34 wks.	Up to 34 wks.
455. PHENYL α-NAPHTHYL KETIMINE HYDROCHLORIDE 								
Headler, C. P., and Keith, J.H., 1955.	10 rats	Wistar	M & F	250 mg./kg. as 5% susp. in 5% tragacanth mucilage daily for 30 d.	P.O	0	All sacrificed	30 d.

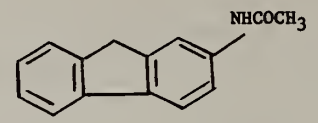
[1480] Hepatic degeneration study. No other pathology reported.
[1481] Cholangeal hyperplasia.
[1482] Cholangeal proliferation and hepatic nodules at 6 wks.
[1483] Age: 17–21 days.
[1484] Cholangeal hyperplasia; reversed upon discontinuation of treatment.
[1485] Cholangeal proliferation.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
456. POTASSIUM 2-NAPHTHYL SULFAMATE  •K salt								
Allen, M. J., et al., 1957	20 mice			1 part/4 parts paraffin wax in 8–12 mg. pellet implant.	Urinary bladder	Tumors[1425] [1486].	6 at 52 wks	52 wks.

B. ORGANIC COMPOUNDS—4. TRICYCLIC

457. ACENAPHTHENE 								
Graffi, A., et al., 1953	85 mice		M	3 drops 3% in acetone once wkly. followed by 1 drop 5% croton oil in mineral oil once wkly.	Skin	Tumors[1487]	5 at 12th mo	12 mos.
458. 2-ACETYLAMINO-9, 10-DIHYDROPHENANTHRENE 								
Miller et al., 1955	9 rats		M	1.62 mM/kg. of diet for 8 mos	P.O	Tumors[1488]	2 neg. deaths at 8 mos.	10 mos.
Miller et al., 1955	9 rats		F	1.62 mM/kg. of diet for 8 mos	P.O	Tumors[1489]	9 at 8 mos	10 mos.

[1425] Paraffin controls negative.
[1486] 1 urinary cystic (adenoma).
[1487] 3 papillomas.
[1488] 4 otic tumors, 4 enteric tumors, 1 brain base ganglioneuroma at 10 mos.
[1489] 9 mammary gland tumors, 5 enteric tumors, 1 endometrial sarcoma at 5 mos.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
459. 2-ACETYLAMINOFLUORENE 								
Eyestone, W. H., and Morris, H. P., 1952.	5 dogs	Terrier type	M & F	Total intake from 45–198 grams, mixed in food.	P.O	Tumors[1490]		91 mos.
Bielschowsky, F., and Hall, W. H., 1953.	13 rats[1491]	Wistar	M	4 mg./d. in milk-flour diet for 9 wks., then 2 mg./d. for 4 wks.	P.O	Tumors[1492]		38 wks.
Bielschowsky, F., and Hall, W. H., 1953.	6 rats[1493]	Piebald	M	4 mg./d. in milk-flour diet for 9 wks., then 2 mg./d. for 4 wks.	P.O	Tumors[1494]		38 wks.
Bielschowsky, F., and Hall, W. H., 1953.	6 rats[1495]	Wistar	M	2 mg./d. in milk-flour diet for 20 wks.	P.O	Tumors[1495]		39 wks.
Bielschowsky, F., and Hall, W. H., 1953.	4 rats[1497]	Wistar	M	2 mg./d. in milk-flour diet for 20 wks.	P.O	Tumors[1498]		39 wks.
Bielschowsky, F., and Hall, W. H., 1953.	10 rats	Wistar	M	2 mg./d. in milk-flour diet for 20 wks.	P.O	Tumors[1499]		67 wks.
Bielschowsky, F., and Hall, W. H., 1953.	10 rats	Wistar	F	2 mg./d. in milk-flour diet for 20 wks.	P.O	Tumors[1500]		36 wks.
Bielschowsky, F., and Hall, W. H., 1953.	9 rats[198]	Wistar	M	4 mg./kg. in milk-flour diet for 9 wks., then 2 mg./d. for 4 wks.	P.O	Tumors[1501]		45 wks.
Bielschowsky, F., and Hall, W. H., 1953.	11 rats	Wistar	M	4 mg./kg in milk-flour diet for 9 wks., then 2 mg./d. for 4 wks.	P.O	Tumors[1502]		38 wks.
Bielschowsky, F., and Hall, W. H., 1953.	11 rats[1496]	Wistar	M	2 mg./10 g. wet diet for 4 wks. then 2 mg./12 g. of diet for 16 wks. supplemented with cod liver oil & vegetables.	P.O	0		48 wks.
Bielschowsky, F., and Hall, W. H., 1953.	4 rats[1497]	Wistar	M	2 mg./10 g. wet diet for 4 wks., then 2 mg./12 g. of diet for 16 wks., supplemented with cod liver oil & vegetables.	P.O	Tumors[1503]		43 wks.
Bielschowsky, F., and Hall, W. H., 1953.	12 rats[1495]	Wistar	F	2 mg./10 g. wet diet for 4 wks., then 2 mg./12 g. of diet for 16 wks., supplemented with cod liver oil & vegetables.	P.O	Tumors[1504]		46 wks.

[198] Castrated.
[1490] 4 with hepatic and urinary cystic tumors. (1 with pulmonary metastases at 68–91 mos.)
[1491] Castration prior, and thyroidectomy after initiation of treatment.
[1492] 13 hepatomas; 1 retrobulbar tumor.
[1493] Castration prior, and subtotal thyroidectomy after initiation of treatment.
[1494] 6 hepatomas; 1 otic tumor; 2 mammary tumors.
[1495] Total thyroidectomy.
[1496] 1 brain tumor, 1 benign gastric tumor.
[1497] Subtotal thyroidectomy.
[1498] 2 benign hepatic cholangiomas, 1 hepatoma.
[1499] 9 hepatomas, 1 benign hepatic cholangioma, 1 otic tumor.
[1500] 2 hepatomas, 7 benign hepatic cholangiomas, 3 otic tumors, 4 mammary tumors, 1 benign uterine tumor.
[1501] 5 hepatomas, 3 benign hepatic cholangiomas, 1 leukemia, 7 otic tumors, 1 pulmonary adenoma.
[1502] 11 hepatomas, 6 otic tumors, 1 mammary tumor.
[1503] 3 hepatomas, 1 retrobulbar tumor, 2 thyroid tumors remanent.
[1504] 1 retrobulbar tumor, 2 benign uterine tumors.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
459. 2-ACETYLAMINOFLUORENE (Continued)								
Bielschowsky, F., and Hall, W. H., 1953.	3 rats[1497]	Wistar	F	2 mg./10 g. wet diet for 4 wks., then 2 mg./12 g. of diet for 16 wks., supplemented with cod liver oil & vegetables.	P.O	Tumors[1505]		44 wks.
Graffi, A., et al., 1953	90 mice		M	3 drops 2.5% in acetone once wkly., followed by 1 drop 5% croton oil in mineral oil once wkly.	Skin	Tumors[1506]	8 at 12th mo	12 mos.
Gutmann, H. R., and Peters, J. H., 1953.	7 rats	Sprague-Dawley.	F	500 mg./kg. of basal diet[1507] added in acetone soln., avg. of 6.1 g./rat/d. for 75 d.	P.O	0[1508]		75 d.
Gutmann, H. R., and Peters, J. H., 1953.	5 rats	Sprague-Dawley litter mates.	F	Double-pair fed 500 mg./kg. of basal diet[1509] added in acetone soln., avg. of 5.5 g./rat/d.	P.O	0[1510]	2 died accidentally	69 d.
Gutmann, H. R., and Peters, J. H., 1953.	7 rats	Sprague-Dawley litter mates.	F	Double-pair fed 500 mg./kg. of basal diet[1507] added in acetone soln., avg. of 5.3 g./rat/d. for 69 d.	P.O	0[1511]		69 d.
Gutmann, H. R., and Peters, J. H., 1953.	8 rats	Sprague-Dawley litter mates.	F	Pair fed 500 mg./kg. of basal diet[1509] added in acetone soln., avg. of 7.5 g./rat/d. for 82 d.	P.O	0[1508]		82 d.
Gutmann, H. R., and Peters, J. H., 1953.	7 rats	Sprague-Dawley.	F	500 mg./kg. of basal diet[1509] added in acetone soln., avg. of 7.5 g./rat/d. for 75 d.	P.O	0[1508]		75 d.
Gutmann, H. R., and Peters, J. H., 1953.	8 rats	Sprague-Dawley litter mates.	F	Pair fed 500 mg./kg. of basal diet[1507] added in acetone soln., avg. of 5.7 g./rat/d. for 82 d.	P.O	0[1508]		82. d.
Miyaji, T., et al., 1953	Rats[1512]	Sprague-Dawley.	M & F	2.5 g./5,000 g. diet for 10 wks	P.O	Tumors[1513]		25 wks.
Miyaji, T., et al., 1953	10 rats	Sprague-Dawley.	M	2.5 g. 15,000 g. diet for 20 wks	P.O	Tumors[1514]		20 wks.
Miyaji, T., et al., 1953	40 rats	Sprague-Dawley.	20 M & 20 F	0.005% in diet for 10 wks	P.O	Tumors[1515]		25 wks.
Mosonyi, M., and Korpassy, B., 1953.	28 rats[47]		14 āā	2.5 mg. in diet for 4 wks., then 3 mg./rat/d.	P.O	Tumors[1516, 1517].	5 died before 160 d.	180 d.
Boyland, E., et al., 1954	10 rats	Wistar	F	0.045% in the diet throughout experiment.[1518, 1519]	P.O	Tumors[1520]	5 died by 488 d	628 d.

[47] Young.
[1497] Subtotal thyroidectomy.
[1505] 1 mammary tumor.
[1506] 3 papillomas.
[1507] Contained 11% casein with vitamins.
[1508] Hepatomegaly biochemical study.
[1509] Contained 20% casein with vitamins.
[1510] No details. Biochemical study.
[1511] 17% growth retardation. Biochemical study.
[1512] Adrenalectomized 2 weeks prior to treatments.
[1513] 11 hepatic tumors, 5 mammary tumors.
[1514] Hepatic carcinoma.
[1515] 6 mammary tumors, 3 sebaceous gland tumors.
[1516] 8/8 hepatomas; 4 female, 4 male (1 with cirrhosis).
[1517] Details to be published elsewhere.
[1518] 2-Acetamidofluorene.
[1519] Casein hydrolysate-tryptophan diet.
[1520] 6 urinary cystic carcinomas, 1 papilloma, 5 cholangeal carcinomas. 3 hepatomas, 1 meningeoma.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
459. 2-ACETYLAMINOFLUORENE (Continued)								
Boyland, E., et al., 1954	10 rats	Wistar	F	0.045% in the diet throughout experiment.[1444]	P.O	Tumors[1521]	4 died before 200 d.	480 d.
Dunning and Curtis, 1954	11 rats	Fischer line 344	F	0.06% in the diet.[1522]	P.O	Tumors[1523]	352 d. avg	500 d.
Dunning and Curtis, 1954	16 rats	Fischer line 344	F	0.06% in the diet.[1524]	P.O	Tumors[1525]	283 d. avg	420 d.
Haruno, K., 1954	Rats	Albino		0.3 g. in 20 g. polyethyleneglycol & 1 kg. rice for 150–180 d. Part of the rats were then placed on normal diet for 90–130 d.	P.O	Tumors[1526]	All sacrificed	240–310 d.
Ichii, S., et al., 1954	Rats[119]	Albino		0.3–0.5 g. in 20 cc. polyethylene glycol/kg. of rice for 6 mos. Then fed normal rice diet for 4 mos.	P.O	Tumors[1527]	All sacrificed at end of experiment.	10 mos.
Ichii, S., et al., 1954	60 rats[1528]	Wistar	M	0.05% in diet, fed for 5 mos. Then put on normal rice diet for 2 mos.	P.O	Tumors[1527]	All sacrificed	7 mos.
Kishi, S., et al., 1954	Rats	Albino		0.03% in rice diet for 150–180 d., then placed on normal diet for 90–130 d.	P.O	Tumors[1525]	All sacrificed at end of experiment.	240–310 d.
Lau, H., and Baier, P., 1954	10 rats[1529]			0.05% in diet for 25 wks. 5 first feeding d. choline free.	P.O	Tumors[1530]	3 at 14 mos	Life.
Lau, H., and Baier, P., 1954	12 rats[1529]			0.05% in diet for 25 wks	P.O	Tumors[1531]	6 at 10 mos	Life.
Lau, H., and Baier, P., 1954	80 rats[1529]			0.05% in diet for 32 wks	P.O	Tumors[1532]	22 at 10 mos	Life.
Lau, H., and Baier, P., 1954	10 rats[1529]			0.05% in diet for 25 wks. 4 first feeding d. choline free.	P.O	Tumors[1533]	12 mos	Life.
Leathem, J. H., 1954	Mice		M	0.03% in diet containing 0.1% thyroid.	P.O	0		
Leathem, J. H., 1954	Mice		M & F	0.1% in semisynthetic diet with 0.20% yeast added.	P.O	Tumors[1534]	50% at 40 d	At least 6 mos.
Matsuo, H., 1954	50 rats	Hybrid	23 M, 27 F	0.004% in basal diet of cracked rice, about 0.4 mg./rat./d.[1535]	P.O	0[1535]	44 died during first 130 d.	478 d.
Matsuo, H., 1954	100 rats	Hybrid		0.04% in basal diet of cracked rice, about 4 mg./rat/d.	P.O	Tumors[1537]	40 āā sex died by 100th d.	350 d.
Matsuo, I., 1954	50 rats		23M, 27F	0.004% in diet	P.O	0		488 d.

[119] Adult.
[1444] With Casein.
[1521] 1 hepatoma, 2 cholangeal carcinomas, 1 inguinal carcinoma, 1 otic squamous cell carcinoma, 1 cervical (neck) squamous cell carcinoma, 1 urinary cystic papilloma.
[1522] Tryptophan deficient diet.
[1523] 9% with mammary carcinoma, avg. latent period 253 days. 55% with hepatomas, avg. latent period 400 days.
[1524] Control diet.
[1525] 81% with hepatomas, avg. latent period 302 days. 3 otic squamous cell carcinomas
[1526] Hepatomas, no details.
[1527] Hepatic, no details.
[1528] Age: approx. 2 mos.
[1529] 35–50 grams at age 3 wks.
[1530] 1 mammary carcinoma with hepatic metastases.
[1531] 6 cholangiomas.
[1532] 12 carcinomas: 10 hepatic, 1 enteric, 1 dermal.
[1533] 1 tumor, 1 enteric polyp.
[1534] Hepatic, at 6 mos. (males only).
[1535] 2-Acetaminofluorene.
[1536] 2 with premalignant hepatic lesions at death on day 477 and 478.
[1537] Hepatomas in 4 300-day survivors (3 male, 1 female), 1 male with 4 cell types of hepatoma: hepatocellular carcinoma with pulmonary metastases, atypical hepatoma, fibrosarcoma and reticulosarcoma. No other tumors.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
459. 2-ACETYLAMINOFLUORENE (Continued)								
Matsuo, I., 1954	100 rats	Hybrid	50 M, 50 F	0.04% in diet	P.O	Tumors[1538]	80 died by 100th d.	345 d.
McCallion, D. J., 1954	Frogs			Total of 10 mg. as crystals in gelatin capsule at wkly. intervals up to 2 mos.	P.O	0	1 at 2 mos	Up to 2 mos.
McCallion, D. J., 1954	600 tadpoles			In water (1.3 mg. soluble in 100 cc.).	Immersed in water.	0[1539]	50 survived 60 d., 8 survived 100 d.	133 d.
McCallion, D. J., 1954	Frogs			0.25 mg. in 0.1 cc. of olive oil in gelatin capsule on alt. d. up to 53 d.	P.O	0[1540]	2 at 53 d	Up to 53 d.
Meade, J. M., and Ray, F. E., 1954.	Guinea pig			0.6% soln. for 15 mos	Skin	0		15 mos.
Miller, J. A., et al., 1954	60 rats		30 F, 30 M	1.3 mm./kg. diet for 16 wks	P.O	Tumors[1541]	100% at 32 wks	32 wks.
Mori, K., 1954	20 rats	Albino	F	0.3 g./kg. of food (dry wt.) supplemented with dried liver powder (100 g/900 g. of rice), for 6 mos. Avg. food intake 11.5 g./d. Then put on normal rice diet for 4 additional mos.	P.O	Tumors[1542]	10 survived 300 d., all then sacrificed.	300 d.
Mori, K., 1954	30 rats (control group).	Albino	F	0.3 g./kg. of food (dry wt.) for 6 mos. Avg. food intake 10.5 g./d. Then put on normal rice diet for 4 mos.	P.O	Tumors[1543]	10 survived 300 d., all were then sacrificed.	300 d.
Mori, K., et al., 1954	Rats	Albino	F	0.03% in diet of rice, fish powder, NaCl, and cod liver oil, fed for 6 mos., then put on normal rice diet for 4 mos.	P.O	Tumors[1527]	All sacrificed at end of experiment.	10 mos.
Peacock, P. R., and Peacock, A., 1954.	16 fowls	White Leghorn	M	Aqueous susp.—2 ml. of a 1.5% soln. in the ethyl alcohol added to 10 ml.—0.3% soln. of gelatin in water, 10 ml. of this susp. containing 25 mg. inj. repeatedly 48–106 times.	Inj. into crop	Tumors[1544]	4 died by 109 wks	253 wks.
Rutman, R. J., et al., 1954	Rats	Albino		0.03% in the diet for 90 d	P.O	0[1545]		90 d.
Rutman, R. J., et al., 1954	Rats	Albino		0.03% in the diet	P.O	Tumors[1546]		Up to 1 yr.
Rutman, R. J., et al., 1954	Rats	Albino	M	0.03% in the diet up to 12 mos	P.O	Tumors[1547]	Sacrificed at intervals.	12 mos.
Symeonidis, A., 1954	Rats[1548]	AxC	F	Unspecified	P.O	Tumors[1549]		

[1527] Hepatic, no details.
[1538] 3 males, 1 female with hepatoma.
[1539] Adenomatous hepatic changes. 1 with hepatomegaly (3x).
[1540] Hepatic necrosis; one with renal necrosis.
[1541] 22 hepatic (males) 22 mammary gland (female) 25 otic (male and female) 5 enteric (male and female).
[1542] 2 (20%) with hepatic carcinomas. Details reported elsewhere.
[1543] 7 (43.8%) hepatic carcinomas. 1 death at day 199 with mammary tumor. Details reported elsewhere.
[1544] 7 with tumors (3 renal adenocarcinoma, 1 renal epidermoid carcinoma, 3 pulmonary adenocarcinomas, 1 esophageal squamous cell carcinoma).
[1545] Premalignant hepatic lesions.
[1545] Almost 100% hepatomas.
[1547] Hepatomas; Biochemical investigation.
[1548] Breeders.
[1549] Mammary and hepatic tumors.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
459. 2-ACETYLAMINOFLUORENE (Continued)								
Symeonidis, A., 1954	Rats	Buffalo	F	Unspecified	P.O	Tumors[1549]		
Symeonidis, A., 1954	Rats[1548]	Marshal 520	F	Unspecified	P. O	Tumors[1549]		
Symeonidis, A., 1954	Rats[1548]	Sprague-Dawley.	F	Unspecified	P.O	Tumors[1549]		
Symeonidis, A., 1954	Rats[1548]	Osborne-Mendel.	F	Unspecified	P.O	Tumors[1549]		
Takahashi, T., 1954	Rats	Albino	M	0.3–0.5 g. in 20 cc. polyethylene glycol/kg. of rice for 6 mos. Then fed normal rice diet for 2 mos.	P.O	Tumors[1527]	8 mos	8 mos.
Asano, B., 1955	18 rats	White-Wistar	Mixed	0.05% incorporated in diet for 150–180 d. Then placed on basal diet for 90–120 d.	P.O	Tumors[1550]	Duration of experiment.	240–300 d.
Campbell, 1955	5 chickens[1551]	Brown Leghorn	F	25 mg. 2-AAF in 0.6 ml. sesame oil in gelatin capsules 6 times a wk. for 3 mos.[1518,1552]	P.O	5[1553]	All but 1 killed after 63 mos. (other died naturally—63 mo.)	63 mos.
Dunning, W. F., and Curtis, M. R., 1955.	16 rats	Fischer line 344, Albino.	F	3.7 mg. daily in isocaloric synthetic diet supplemented with 26.0% casein.	P.O	Tumors[1554]	Avg. survival 283 d.	At least 283 d.
Dunning, W. F., and Curtis, M. R., 1955.	11 rats	Fischer line 344, Albino.	F	3.7 mg. daily in isocaloric synthetic diet supplemented with 0.14% DL-tryptophane.	P.O	Tumors[1555]	Avg. survival 352 d.	At least 352 d.
Haruno, K., Kishi, S., 1955	Rats			In normal diet for a long period of time.	P.O	Tumors[1527]	All sacrificed	
Ichii, S., 1955	Rats	Wistar	M	0.06% dissolved in 30 ml. polyethylene glycol in rice diet, daily for 5 mos., then placed on normal rice diet for 2 mos.	P.O	Tumors[1527]	All sacrificed at end of experiment.	7 mos.
Kishi, S., et al., 1955	Rats[1558]	Albino, Wistar, mixed.		0.05% in diet for 150–180 d. Then interrupted with normal diet for 90–120 d.	P.O	Tumors[1526]	All sacrificed at end of experiment.	240–300 d.
Laws, J. O., et al., 1955	Rats	Wistar	M	0.05% in the diet for 24 wks	P.O	Tumors[1557]	18 at 18 wks	Up to 39 wks.
Morris, H. P., et al., 1955	18 rats	Buffalo	F	6 mg. (dissolved in coconut oil)/100 g. of body wt., twice wkly. for first 3 wks., once wkly. thereafter.[1558]	P.O., stomach tube.	5[1559]	40% alive at 8 wks.	Approx. 8 mos.

[1528] Hepatomas, no details.
[1527] Hepatic, no details.
[1948] 33 mammary tumors, 26 ovarian granulosa cell tumors.
[1949] Data from abstract.
[1550] 4 with hepatomas.
[1551] Age approx. 6 mos.
[1552] Total individual dose: 1.925 gms.
[1553] 3 hepatic carcinoma (2 with cirrhosis), 1 enteric tumor, 2 fallopian adenocarcinomas, 2 ovarian adenocarcinomas, 2 renal tumors.
[1554] 6 multiple malignant hepatomas (3 with pulmonary metastases), 3 otic squamous cell carcinomas, 7 with hepatomas (malignancy doubtful).
[1555] 5 hepatic carcinomas, 1 hepatoma (malignancy doubtful), probable adenocarcinomas, 1 inguinal squamous cell carcinoma (mammary origin).
[1556] Weight: 100 gm.
[1557] Otic and hepatic tumors. Study of otitis and otic tumors; no correlation.
[1558] 2 μg. riboflavin/gm. of diet.
[1559] 1 with hepatoma, 3 with mammary adenocarcinomas (1 multiple), 1 with otic squamous cell carcinoma.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
459. 2-ACETYLAMINOFLUORENE (Continued)								
Morris, H. P., et al., 1955	18 rats	Buffalo	F	6 mg. (dissolved in coconut oil)/100 g. of body wt. twice wkly. for first 3 wks., once wkly. thereafter.[1560]	P.O., stomach tube.	11[1561]	60% alive at 29 wks.	Approx. 9 mos.
Morris, H. P., et al., 1955	18 rats	Buffalo	F	6 mg. (dissolved in coconut oil)/100 g. of body wt., twice wkly. for first 3 wks., once wkly. thereafter.[1562]	P.O., stomach tube.	6[1563]	40% alive at 8 wks.	Approx. 11 mos.
Ritchie, A. C., and Saffiotti, U., 1955.	25 mice	Swiss	F	0.24% in diet for 50 d	P.O	Tumors[1564]	11 at 64 wks	64 wks.
Ritchie, A. C., and Saffiotti, U., 1955.	25 mice	Swiss	F	0.24% in diet for 41 wks.[1565]	P.O	Tumors[1566]	15 at 48 wks	48 wks.
Ritchie, A. C., and Saffiotti, U., 1955.	29 mice	CAF_1	22 F, 7 M	0.24% in the diet for 20 wks.[1567]	P.O	Tumors[1564]	23 at 40 wks	40 wks.
Ritchie, A. C., and Saffiotti, U., 1955.	20 mice	CAF_1	14 F, 6 M	0.24% in diet for 20 wks.[1568]	P.O	Tumors[1564]	18 at 40 wks	40 wks.
Ritchie, A. C., and Saffiotti, U., 1955.	25 mice	Swiss	F	0.24% in the diet for 21 wks.[1569]	P.O	Tumors[1570]	12 at 53 wks	53 wks.
Ritchie, A. C., and Saffiotti, U., 1955.	25 mice	Swiss	F	0.24% in the diet for 21 wks	P.O	Tumors[1564]	20 at 53 wks	53 wks.
Ritchie, A. C., and Saffiotti, U., 1955.	29 mice	CAF_1	22 F, 7 M	0.24% in the diet for 20 wks.[1571]	P.O	Tumors[1572]	23 at 40 wks	40 wks.
Ritchie, A. C., and Saffiotti, U., 1955.	60 mice	Swiss	F	0.24% in diet for 41 wks	P.O	Tumors[1564]	49 at 48 wks	48 wks.
Sirtori, C., et al., 1955	40 rats	White	M	0.125% in Coward diet.[1573]	P.O	0		At least 92 d.
Skoryna, S. C., 1955	32 rats[1574]	RVH hooded	M & F	0.004–0.008% in diet for 26 wks	P.O	Tumors[1575]	9 died	At least 26 wks.
Skoryna, S. C., 1955	28 rats	RVH hooded	M & F	0.004–0.008% in diet for 14 wks	P.O	Tumors[1576]	2 died	At least 14 wks.
Skoryna, S. C., 1955	32 rats[1577]	RVH hooded	M & F	0.004–0.008% in diet for 14 wks	P.O	0[1578]	25 died after 14th wks.	At least 14 wks.
Skoryna, S. C., 1955	32 rats[1574]	RVH hooded	M & F	0.004–0.008% in diet for 26 wks	P.O	Tumors[1579]	19 at 32 wks	46 wks.

[1560] 10 μg. of riboflavin/gram of diet.
[1561] 4 with hepatomas; 7 with mammary adenocarcinomas (4 multiple); 9 with otic squamous cell carcinoma; 1 adrenocortical nodule; 1 fallopian carcinoma; 1 uterine sarcoma; 3 enteric adenocarcinomas; 1 pancreatic "region" tumor.
[1562] 1 μg. of riboflavin/gram of diet.
[1563] 2 with hepatomas, 4 with otic squamous cell carcinoma.
[1564] No dermal tumors. Other tumors present; no details.
[1565] Single application of 1.5% 9,10-dimethyl 1,2-benzanthracene in mineral oil, 1 week prior to AAF feeding.
[1566] 9 with 13 papillomas (3 progressed to carcinoma). Other tumors present; no details.
[1567] Semi-weekly application of 5% croton oil in mineral oil begun 4 weeks after completing AAF feeding.
[1568] Semi-weekly application of mineral oil begun 4 weeks after completing AAF feeding.
[1569] Semi-weekly application of croton oil in mineral oil begun 4 weeks after completing AAF feeding.
[1570] 15 papillomas. Other tumors present; no details.
[1571] 92 semi-weekly applications of 5% croton oil in mineral oil begun 7 days after completing AAF feeding.
[1572] 59 papillomas (3 progressed to carcinomas). Other tumors present; no details.
[1573] 30 received 2.5 μl. ACTH twice a day for first 10 days.
[1574] Hypophysectomized after 26 weeks treatment.
[1575] 1 sebaceous gland carcinoma, 1 unspecified tumor.
[1576] 15 unspecified tumors.
[1577] Hypophysectomized after 14 weeks treatment.
[1578] Mortality attributed to toxicity.
[1579] Benign hepatic tumors at 26 wks., 1 hepatic carcinoma 6 wks. after hypophysectomy.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
459. 2-ACETYLAMINOFLUORENE (Continued)								
Skoryna, S. C., 1955	Rats[1580]	RVH hooded	M & F	0.004–0.008% in diet, after 6 wks. reduced to 0.004% up to 35 wks.	P.O	Tumors[1581]		At least 35 wks.
Skoryna, S. C., 1955	28 rats	RVH hooded	M & F	0.004–0.008% in diet for 26 wks	P.O	Tumors[1582]	6 died	At least 40 wks.
Skoryna, S. C., 1955	28 rats	RVH hooded	M & F	0.004–0.008% in diet for 26 wks., restricted diet.	P.O	Tumors[1583]	5 died	At least 26 wks.
Urquhart, M. E., 1955	Guinea pigs		M & F	0.07 g. daily in diet up to 1471 d.[1518]	P.O	0	All sacrificed	At least 1471 d.
Argus, M. F., and Ray, F. E., 1956.	26 rats	Sprague-Dawley.	M	80 mg. in water-olive oil emulsion	I.P	Tumors[1584]		
Argus, M. F., and Ray, F. E., 1956.	26 mice	C3H	F	Unspecified amt. for 20 wks	P.O	Tumors[1585]		At least 20 wks.
Argus, M. F., and Ray, F. E., 1956.	9 rats			195 mg. in 13 wkly. injs	S.C	Tumors[1586]		At least 13 wks.
Argus, M. F., and Ray, F. E., 1956.	Rats				P.O	Tumors[14]		
Argus, M. F., and Ray, F. E., 1956.	Mice	C3H	M	Unspecified amt. for 20 wks	P.O	Tumors[1587]		At least 20 wks.
Farber, E., 1956	10 rats	Wistar	M & F	Incorporated into diet at level of 0.04%.	P.O	0[1588]	Sacrificed at wkly. intervals beginning at 7 d.	49 d.
Guthrie, 1956	16 rats[1589]	Albino	M	5 mg. carcinogen dissolved in acetone & mixed with 0.2 ml. of warm tricaprylin.	Intra-testicular inj.	2[1590]	15 at 11 mos	14 mos.
Haruno, K., 1956	Rats	Albino	M	0.05% in diet for 150–180 d., fed basal diet only for 90–120 d. more.	P.O	Tumors[1591]		Up to 300 d.
Kishi, S., et al., 1956	Rats	Albino	M	0.05% in diet for 150–180 d., fed normal diet for 90–120 d. more.	P.O	Tumors[1591]		Up to 300 d.
Miller et al., 1956	19 rats	Albino	F	1.62 mM/kg. diet	P.O	Tumors[1592]	17 at 8 mos	10 mos.
Miller et al., 1956	19 rats	Albino	M	1.62 mM/kg. diet	P.O	Tumors[1593]	17 at 8 mos	10 mos.
Sato, T., 1956	Rats	Albino	M	0.05% in diet for 150–180 d., fed basal diet only for 90–120 d. more.	P.O	Tumors[1591]		Up to 300

[14] No pathology given.
[1518] 2-Acetamidofluorene.
[1580] Repeated subtotal hepatectomies at 4–5 wk. intervals.
[1581] Hepatic tumors; benign at 6 mos., malignant with metastases at 7 mos. Sebaceous gland carcinomas in males and females. Mammary tumors.
[1582] 11 with tumors: 4 otic sebaceous gland carcinomas, 2 hepatic carcinomas with metastases, 1 benign cholangioma with multiple hepatomas, 2 mammary carcinomas, 1 sebaceous gland carcinoma and mammary fibroadenoma, 1 pulmonary adenoma all at 27–40 wks.
[1583] 8 unspecified tumors.
[1584] 7/26 basal cell carcinoma, sarcoma, fibroma, renal adenoma, three hepatomas.
[1585] 3 with hepatomas.
[1586] 1 cholangioma.
[1587] 6 hepatomas, 4 urinary cystic tumors.
[1588] Insufficient time for tumor induction. Early pathological hepatic changes described.
[1589] Age at start: 4 mos.
[1590] 2 with testicular interstitial cell tumors in treated testicle. 1 with peritoneal renal and hepatic invasion.
[1591] Hepatomas.
[1592] 2 hepatic tumors, 14 mammary gland tumors, 11 otic tumors, 4 enteric tumors.
[1593] 17 hepatic tumors, 7 otic tumors, 2 enteric tumors.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
459. 2-ACETYLAMINOFLUORENE (Continued)								
Sommers, S., and Chute, R., 1956.	4 pair rats[1594]	Slonaker	F	Administered to right-hand parabiont for 29–45 d.	P.O., stomach tube.		All sacrificed	45 d.
Sommers, S., and Chute, R., 1956.	13 pair rats[1594]	Slonaker	F	5 mg. in 0.5 ml. peanut oil to left-hand pair, 3 times wk., for 14–18 wks. Total of 215–275 mg. However, 2 recd. only 5 mg.	P.O., stomach tube.	Tumors[1595]	High mortality following parabiosis.	At least 610 d.
Weisburger, E. K., et al., 1956.	18 rats	Buffalo	F	Over—10.3–12.1 mg./kg. body wt. in diet up to 50 wks.	P.O	Tumors[1595]	3 at 41 wks	50 wks.
Dunning, W. F., and Curtis, M. R., 1957.	12 rats	Fischer 344	F	0.06% in synthetic diet with 1.0% indole acetic acid.	P.O	Tumors[1597]		
Dunning, W. F., and Curtis, M. R., 1957.	12 rats	Fischer 344	F	0.06% in synthetic diet with 1.4% DL-tryptophan.	P.O	Tumors[1598]		
Dunning, W. F., and Curtis, M. R., 1957.	12 rats	Fischer 344	F	0.06% in synthetic diet with 0.8% indole.	P.O	Tumors[1599]		
Dunning, W. F., and Curtis, M. R., 1957.	12 rats	Fischer 344	F	0.06% in synthetic diet with 1.6% indole.	P.O	Tumors[1599]		
Hachisuga, T., et al., 1957	20 rats		M	0.04% in basic diet for 34 wks	P.O	Tumors[1600]	0	319 d.
Maisin, J., et al., 1957	50 rats	White	25 F & M	0.04% in olive oil in rice diet, avg. 7.5 gr. of rice/rat/d. for life.	P.O	Tumors[1601]	All dead by 55th wk.	55 wks.
Maisin, J., et al., 1957	Rats	White		0.4% in olive oil in rice diet	P.O	0[1602]	3 killed at fixed intervals.	At least 120 d.
Rodgriguez, N. M., et al., 1957.	34 mice	Swiss	M	27.9–45.0 mg./d./kg. body wt. up to 12 mos.	P.O	0[1603]	6 killed at 6 mos., 4 at 8½ mos., 8 at 9½ mos., 8 at 10½ mos., 8 at end.	1 yr.
Spjut and Eichwald, 1957	13 rats[1604]	Sprague-Dawley.	F	50 mg./ml. of polyethlene glycol 300, 1 ml. dose wkly.[1605]	Intracecal inj	10 (80%)[1605].	Sacrificed at 3 mo. intervals.	Approx. 49 wks.
Spjut and Eichwald, 1957	15 rats[1607]	Sprague-Dawley.	F	50 mg./ml. of polyethylene glycol 300, 1 ml. dose wkly.	Intracecal inj	8 (53%)[1608]	Sacrificed at 3 mo. intervals.	Approx. 49 wks.
Spjut and Eichwald, 1957	40 rats[56]	Sprague-Dawley.	F	50 mg./ml. of polyethylene glycol 300, 1 ml. dose wkly.	Intracecal inj	35 (86%)[1609].	Sacrificed at intervals of 3 mos.	Approx. 49 wks.

[56] Age at start: 3 mos.
[1594] Parabiotic, right-hand pair hemicastrated.
[1595] 8 parabionts with 12 tumors: 2 granulosa cell carcinoma, 1 hepatoma, 1 undifferentiated uterine carcinoma, 1 epidermoid parotid carcinoma, 1 harderian gland adenocarcinoma, 1 femoral osteogenic sarcoma. 5 mammary tumors: 2 carcinoma simplex, 1 papillary carcinoma, 1 adenocarcinoma, 1 early carcinoma. Adenomas: 1 cholangeal adenoma, 6 amphophile pituitary adenomas, 1 mammary fibroadenoma, 1 adrenocortical adenoma, 1 harderian gland adenoma. Abdominal renal and hepatic metastases. (Abdominal metastases spread to other partner.) Amphophile pituitary adenomas occurred in each animal with multiple primary cancer.
[1596] 16 with 25 mammary tumors. 12 with 12 liver tumors, 4 with 5 otic tumors.
[1597] Hepatic carcinoma and 58% with urinary cystic papillomas or squamous cell carcinomas.
[1598] Hepatic carcinomas and 75% with urinary papillomas or squamous cell carcinomas.
[1599] Hepatic carcinomas and 83% with urinary cystic papillomas or squamous cell carcinomas.
[1600] 1 hepatocellular hepatoma, 1 cholangiocarcinoma.
[1601] 8 with hepatic carcinoma, 11 with cholangioma.
[1602] Hepatic cirrhosis from 120th day.
[1603] 2 with hepatic nodular hyperplasia.
[1604] Age at initial injection: 4 months.
[1605] N–2-fluorenylacetamide.
[1606] Mammary adenocarcinomas (multiple in 5).
[1607] Age at initial injection: 5–6 mos.
[1608] Mammary adenocarcinomas (multiple in 3).
[1609] Mammary adenocarcinomas (multiple in 25).

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
459. 2-ACETYLAMINOFLUORENE (Continued)								
Theret, C., 1957	18 rats (adult).	Wistar	M	3 mg. daily	P.O. or S.C	Tumors[1610]		Not specified.
Theret, C., 1957	66 rats (adult).	Wistar	M	3 mg. daily	P.O. or S.C	Hepatomas		Not specified.
Dunning, W. F., and Curtis, M. R., 1958.	12 rats	Fischer line 344	F	0.06% in diet supplemented with 1.6% indole.	P.O	Tumors[1611]	Avg. survival 436 d.	
Dunning, W. F., and Curtis, M. R., 1958.	12 rats	Fischer line 344	F	0.06% in diet supplemented with 0.8% indole.	P.O	Tumors[1612]	Avg. survival 407 d.	
Dunning, W. F., and Curtis, M. R., 1958.	12 rats	Fischer line 344	F	0.06% in diet supplemented with 1.0% indole acetic acid.	P.O	Tumors[1613]	Avg. survival 344 d.	
Dunning, W. F., and Curtis, M. R., 1958.	12 rats	Fischer line 344	F	0.06% in diet supplemented with 1.4% DL-tryptophan.	P.O	Tumors[1614]	Avg. survival 360 d.	
Dunning, W. F., and Curtis, M. R., 1957.	16 rats	Fischer line 344	F	0.06% with 45% casein	P.O	Tumors[1615]	349±11 d	
Dunning, W. F., and Curtis, M. R., 1958.	11 rats	Fischer 344	F	0.06% with 5% nucleic acid	P.O	Tumors[1616]	315±6.1 d	
Dunning, W. F., and Curtis, M. R., 1958.	12 rats	Fischer 344	F	0.06% with 2% nucleic acid	P.O	Tumors[1617]	322± 6.1 d.	
Dunning, W. F., and Curtis, M. R., 1958.	12 rats	Fischer 344	F	.06% with 5% Brewers yeast	P.O	Tumors[1618]	317±6.5 d	
Dunning, W. F., and Curtis, M. R., 1958.	12 rats	Fischer 344	F	.06% with 1% nucleic acid	P.O	Tumors[1619]	324±11 d.	
Dunning, W. F., and Curtis, M. R., 1958.	18 rats	Fischer 344	F	.06% with 5% nucleic acid yeast	P.O	Tumors[1620]	409±9.4 d	
Leathem, J. H., and Harding, H. R., 1958.	Mice	C3H	M & F	0.03 and 0.1% in diet for 6 mos	P.O	Tumors[1621]		6 mos.
Leathem, J. H., and Harding, H. R., 1958.	Mice	Swiss	M & F	0.03 and 0.1% in diet for 6 mos	P.O	0		6 mos.
Miller, E. C., et al., 1958	30 rats	Albino	F	0.03% of grain diet for 16 wks	P.O	Tumors[1622]	29 at 23 wks	32 wks.
Miller, E. C., et al., 1958	30 rats	Albino	M	0.03% of grain diet for 16 wks	P.O	Tumors[1623]	26 at 23 wks	32 wks.

[1610] 16 hepatomas.

[1611] 83% hepatic tumor: 6 hepatomas, 8 cholangioma, and adenocarcinomas with pulmonary metastases. 83% urinary cystic tumors: (papillomas or squamous cell carcinoma).

[1612] 83% hepatic tumors: 7 hepatoma, 8 cholangioma and adenocarcinoma with pulmonary metastases. 25% otic tumors, 17% mammary tumors. 83% urinary cystic tumors: (papillomas or squamous cell carcinoma).

[1613] 83% hepatic tumors: 10 hepatoma, 6 cholangioma and adenocarcinoma with pulmonary metastases. 25% otic tumors. 58% urinary cystic tumors. (papillomas or squamous cell carcinoma).

[1614] 91% hepatic tumors: 11 hepatoma, 4 cholangioma and adenocarcinoma with pulmonary metastases. 25% otic tumors. 17% mammary tumors. 75% urinary cystic tumors: (papillomas or squamous cell carcinoma).

[1615] 75% hepatic tumors; 67% metastases; 44% otic tumors in 323 days; 25% mammary tumors in 327 days.

[1616] 83% hepatic tumors; 30% metastases; 75% otic tumors; avg. 286 days.

[1617] 92% hepatic tumors; 54% metastases; 50% otic tumors in 280 days; 1 pulmonary adenocarcinoma.

[1618] 82% hepatic tumors; 30% metastases; 64% otic tumors, avg. 319 days; 1 adenocarcinoma. 1 ilial osteogenic sarcoma.

[1619] 67% hepatic tumors; 62% metastases; 67% otic tumors in 290 days.

[1620] 83% hepatic tumors; 47% metastases; 33% otic tumors in 338 days; 6% mammary tumors in 406 days; 1 forelimb fibrosarcoma with metastases; 1 adrenal adenoma.

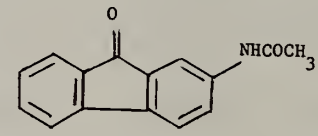
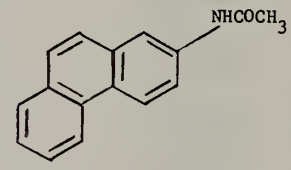
[1621] 8% and 20% hepatoma incidence.

[1622] 14 with otic tumors at 32 wks. 22 with mammary tumors at 32 wks. 2 with enteric tumors at 32 wks.

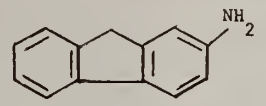
[1623] 22 with hepatic tumors at 32 wks. 11 with otic tumors at 32 wks. 3 with enteric tumors at 32 wks.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
459. 2-ACETYLAMINOFLUORENE (Continued)								
Sorof, S., et al., 1958	Rats	Lankenau-Carworth-Wistar.	M	0.036% in diet for 5 wks	P.O	(84)		At least 5 wks.
Argus, M. F., and Ray, F. E., 1959.	23 rats	Wistar	M	3 mg. in 1 ml. 1% methylcellulose 5 times wkly. for 20 wks.	P.O., stomach tube.	Tumors[1624]		At least 29 wks.
Della Porta, G., et al., 1959	30 hamsters	Syrian golden	15 M, 15 F	0.04% in diet for 40 wks., approx. 20 mg./wk., fed normal pellet diet thereafter.[1626]	P.O	Tumors[1626, 1827].	All females dead at 39 wks., 7 males at 40 wks.	84 wks.
Della Porta, G., et al., 1959	20 hamsters	Syrian golden	10 M, 10 F	0.04% in diet for 26 wks., approx. 20 mg./wk., fed normal pellet diet thereafter.	P.O	Tumors[1827, 1628].	8 F & 8 M at 50 wks.	80 wks.
Klein, M., 1959	Mice[1629]	Albino	M & F	0.05 ml. of 1.4% in susp. of methocel-Aerosol OT for 10 feedings.	P.O., stomach tube.	Tumors[1630, 1631].	62 M & 86 F at time of 1st tumor.	1 yr.
Kuschner, M., et al., 1959	10 rats			3–5 mg. in cylindrical stainless-steel wire mesh pellet.	Left inferior bronchus implant.	0		
Laird, A. K., and Barton, A. D., 1959.	Rats	Sprague-Dawley.	M	0.06% in grain diet up to 25 wks	P.O	Tumors[1627]	3 died between 10th & 15th wk.	25 wks.
Laird, A. K., and Barton, A. D., 1959.	Rats	Holtzman	M	0.05% in grain diet, reduced to 0.04%, up to 25 wks.	P.O	Tumors[1627]	4 died between 5th & 10th wks.	25 wks.
Laws, J. O., 1959	Rats[119]	Birmingham	M	Dissolved in acetone, 0.1% in meal diet ad. lib. for 4 mos.	P.O	Tumors[1632]	11 at 12 mos	Over 17 mos.
Laws, J. O., 1959	Rats[1633]	Birmingham	M	Dissolved in acetone, 0.1% in meal diet ad. lib. for 4 mos.	P.O	Tumors[1834]	10 at 12 mos	Over 17 mos.
Laws, J. O., 1959	Rats[1835]	Wistar albino	M	Dissolved in acetone, 0.1% in meal diet ad. lib. for 4 mos.	P.O	Tumors[1638]	10 at 12 mos	Up to 24 mos.
Laws, J. O., 1959	Rats[1637]	Wistar albino	M	Dissolved in acetone, 0.1% in meal diet fed ad. lib.	P.O	Tumors[1638]	11 at 12 mos	Up to 24 mos.
Laws, J. O., 1959	Rats[1639]	Wistar albino	M	Dissolved in acetone, 0.1% in meal diet fed ad. lib.	P.O	Tumors[1640]	10 at 12 mos	Up to 24 mos.
Laws, J. O., 1959	Rats[1641]	Wistar albino	M	Dissolved in acetone 0.1% in meal diet fed ad. lib.	P.O	Tumors[1642]	10 at 12 mos	Up to 24 mos.

[84] Biochemical study.
[119] Adult.
[1624] 10 with hepatic tumors, 1st at 29 wks.
[1625] N-2-Fluorenylacetamide.
[1626] Benign cholangiomatous lesions, 2 cholangioadenocarcinomas in males at 62 and 69 wks. 1 cecal adenocarcinoma at 69 wks. (relationship doubtful).
[1627] 1/151 untreated controls with cholangiocarcinoma (female).
[1628] Benign cholangiomatous lesions, cholangioadenocarcinomas (2 females) at 63 and 67 wks; 1 cholangioadenocarcinoma (male) at 67 wks. 1 lymphoma (male) at 72 wks., 1 leiomyosarcoma (male) at 80 wks. (relationship doubtful).
[1629] Age: 7–8 days.
[1630] 37 (60%) males with hepatomas, 1 (1%) females with hepatomas. 17 males with pulmonary adenomas. 27 females with pulmonary adenomas.
[1631] Methocel—aerosol OT suspension treated controls with 1 hepatoma and 17 pulmonary adenomas.
[1632] 4 with hepatomas, 1 at 12, 3 at 17 mos.
[1633] Age: 8 wks.
[1634] 8 with hepatomas, 6 at 12, 2 at 17 mos.
[1636] Subtotal hepatectomy after treatment.
[1636] 8 with hepatomas. (12–24 mos.)
[1637] Subtotal hepatectomy 3 mos. after first treatment.
[1638] 9 with hepatomas, (15–24 mos.).
[1639] Subtotal hepatectomy at start of treatment.
[1640] 10 with hepatomas (12–24 mos.).
[1641] Subtotal hepatectomy 3 wks. prior to treatments.
[1642] 8 with hepatomas (15–24 mos.).

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
459. 2-ACETYLAMINOFLUORENE (Continued)								
Napalkov, N. P., 1959	Rats	Stock albino	M & F	120 mg. as susp. in sunflower seed oil for 40 d.	P.O., stomach tube.	0[1643]	Killed between 1 & 24 mos.	Up to 24 mos.
Knox, W. E., 1960	14 rats	Slonaker	F	0.06% in diet +1.4% DL-tryptophan.	P.O	Tumors[1644]	Mean 9 mos	280 d.
Knox, W. E., 1960	14 rats	Slonaker	F	0.06% in diet	P.O	Tumors[1645]	Mean 9 mos	270 d.
460. 2-ACETYLAMINO-9-FLUORENONE[1646] 								
Morris, H. P., et al., 1960	18 rats[1647]	Buffalo	F	0.025% in diet for 2.8–19.8 mos., avg. daily intake 2.7 mg.	P.O	Tumors[1648, 1649]	Avg. age 17.6 mos	
461. 2-ACETYLAMINOPHENANTHRENE 								
Hartmann, H. A., et al., 1957	Rats	Holtzman	M		P.O	Tumors[1660]	40 from 3–12 mos	12 mos.
Hartmann, H. A., et al., 1957	Rats	Holtzman	F	0.02% in grain diet for 3 mos	P.O	Tumors[1661]	67 from 3–12 mos	12 mos.
Ikeda, Y., et al., 1957	6 rats	Albino		1.0 mm. in 1 kg. of basic diet for 14 wks.	P.O	Tumors[1662]		1 yr.
Ikeda, Y., et al., 1957	4 rats	Albino		1.62 mm. in 1 kg. of basic diet for 13 wks.	P.O	Tumors[1663]	All died	20 wks.
Hartmann, H. A., et al., 1959	46 rats	Holtzman, albino.	M	0.02% in grain diet for 4 mos	P.O	Tumors[1654, 1665]	5–12 mos	Up to 12 mos.

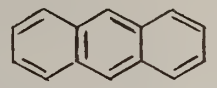
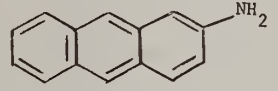
[1643] No thyroid changes.
[1644] Approximately 70% hepatomas, 40% otic squamous cell carcinomas. Under 10% urinary cystic squamous cell carcinomas.
[1646] Approximately 65% hepatomas, 20% otic squamous cell carcinomas. Under 10% urinary cystic squamous cell carcinomas.
[1646] N-(9-oxo-2-fluorenyl) acetamide.
[1647] Age: 2.6 mos. avg.
[1648] 11 with 24 mammary adenocarcinoma; 1 mammary carcinoma; 1 hepatoma; 2 adenocarcinoma; 1 fibrosarcoma and 1 uterine papillary adenocarcinoma; 3 otic squamous cell carcinomas; 2 lymphosarcomas; 1 leukemia; 4 renal adenomas; 1 pancreatic ductal carcinoma; 1 pituitary adenoma.
[1649] 2/18 untreated controls with pituitary adenomas, 1 renal adenoma and 1 leukemia.
[1660] 12 with lymphocytic leukemia, 29% otic epidermoid carcinomas.
[1661] 42 with lymphocytic leukemia, 45% mammary adenocarcinomas and 29% otic epidermoid carcinomas. Controls negative.
[1662] 2 myelogenous leukemias, 1 mammary adenoma.
[1663] 1 myelogenous leukemia.
[1654] 12 with leukemia, 22 with otic squamous cell carcinoma, 4 with cecal carcinoma, 1 enteric adenocarcinoma.
[1666] 17 untreated female controls negative.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
461. 2-AC ETYLAMINOPHENANTHRENE (Continued)								
Hartmann, H. A., et al., 1959	31 rats	Holtzman, albino.	F	0.02% in grain diet for 2 mos	P.O	Tumors[1655, 1656]	4–9 mos	Up to 9 mos.
Hartmann, H. A., et al., 1959	32 rats	Holtzman, albino.	F	0.02% in grain diet for 3 mos	P.O	Tumors[1655, 1657]	4–9 mos	Up to 9 mos.
Hartmann, H. A., et al., 1959	34 rats	Holtzman, albino.	F	0.02% in grain diet for 5 wks., basal diet for 10 d., 0.015% in grain diet for 6 wks.	P.O	Tumors[1655, 1658]	4–7 mos	Up to 7 mos.
Ikeda, Y., et al., 1959	16 rats	Albino		0.86 mm. in 1 kg. of basic diet for 16 wks.	P.O			1 yr.
462. 2-AMINOFLUORENE 								
Bielschowsky, F., and Hall, W. H., 1953.	6 rats[1495]	Piebald	M	4% soln. in acetone 3 times/wk. for 90 applications.	Skin	Tumors[1659]		51 wks.
Bielschowsky, F., and Hall, W. H., 1953.	4 rats[1497]	Piebald	M	4% soln. in acetone 3 times/wk. for 90 applications.	Skin	Tumors[1660]		52 wks.
Bielschowsky, F., and Hall, W. H., 1953.	10 rats	Wistar	M	4% soln. in acetone 3 times/wk. for 70 applications.	Skin	Tumors[1551]		36 wks.
Bielschowsky, F., and Hall, W. H., 1953.	14 rats[1495]	Wistar	M	4% soln. in acetone 3 times/wk. for 70 applications.	Skin	Tumors[1662]		55 wks.
Bielschowsky, F., and Hall, W. H., 1953.	6 rats[1497]	Piebald	M	4% soln. in acetone 3 times/wk. for 90 applications.	Skin	Tumors[1563]		48 wks.
Bielschowsky, F., and Hall, W. H., 1953.	8 rats	Piebald	M	4% soln. in acetone 3 times/wk. for 90 applications.	Skin	Tumors[1664]		50 wks.
Graffi, A., et al., 1953	115 mice		M	3 drops 2.5% in acetone wkly. (once/wk.) followed by 1 drop 5% croton oil in mineral oil once wkly.	Skin	Tumors[1665]	7 at 12th mo	12 mos.
Meade, J. M., and Ray, F. E., 1954.	Guinea pigs				P.O	0		12 mos.

[1495] Total thyroidectomy.
[1497] Subtotal thyroidectomy.
[1555] 17 untreated female controls negative.
[1555] 11 with leukemia, 10 with mammary adenocarcinoma, 2 with otic squamous cell carcinoma.
[1557] 20 with leukemia, 17 with mammary adenocarcinoma, 8 with otic squamous cell carcinoma.
[1558] 11 with leukemia, 26 with mammary adenocarcinoma, 4 with otic squamous cell carcinoma.
[1659] 3 otic tumors.
[1560] 1 benign hepatic cholangioma, 1 hepatoma.
[1661] 10 hepatomas, 2 otic tumors.
[1652] 1 otic tumor, 1 pulmonary adenoma.
[1553] 1 benign hepatic cholangioma, 5 hepatomas, 3 otic tumors.
[1664] 1 benign hepatic cholangioma, 6 hepatomas, 1 mammary tumor.
[1655] 1 papilloma.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
462. 2-AMINOFLUORENE (Continued)								
Argus, M. F., and Ray, F. E., 1956.	27 rats	Sprague-Dawley.	M	80 mg. in water-olive oil emulsion	I.P	Tumors[1666]		
Argus, M. F., and Ray, F. E., 1956.	Rats				P.O	Tumors[14]		
Argus, M. F., and Ray, F. E., 1956.	11 rats			Approx. 560 mg. within 284 d	P.O	Tumors[1667]		284 d.
Argus, M. F., and Ray, F. E., 1956.	9 rats			195 mg. in 13 wkly. injs	S.C	Tumors[1668]		At least 13 wks.
Argus, M. F., and Ray, F. E., 1956.	12 guinea pigs		M	5,600 mg. within 1,032 d	P.O	0		1,032 d.
Breidenbach, A. W., and Argus, M. F., 1956.	32 guinea pigs	Rockland farms	M	0.06% in basal diet ad. lib.[1669] up to 267 d.	P.O	0[1670]	12 at 267 d	2 yrs.
Guthrie, 1956	9 rats	Albino	M	3.75 mg. of chemical dissolved in acetone & mixed with 0.15 ml. of warm tricaprylin (2.5% soln.).	Intra-testical inj.	0		6 mos.
Bielschowsky, F., 1958	5 rats[1671]	Albino	M	4% soln. in acetone thrice wkly. for 70 doses.	Skin, interscapular region.	Tumors[1672]		42 wks.
Bielschowsky, F., 1958	2 rats[1673]	Albino	M	4% soln. in acetone thrice wkly. for 70 doses.	Skin, interscapular region.	Tumors[1674]		58 wks.
Bielschowsky, F., 1958	4 rats[1673]	Albino	M	4% soln. in acetone thrice wkly. for 70 doses.	Skin, interscapular region.	Tumors[1676]		42 wks.
Bielschowsky, F., 1958	5 rats[1671]	Albino	M	4% soln. in acetone thrice wkly. for 70 doses.	Skin, interscapular region.	Tumors[1676]		58 wks.
Clayson, D. B., et al., 1958	38 mice	Albino		12.5% in compressed cholesterol pellet.	Implanted into the lumen of bladder.	Tumors[1417, 1677]	100%	40 wks.
Bielschowsky, F., and Bielschowsky, M., 1960.	55 mice	Dwarf	M & F	4% soln. in acetone for 90 applications, total 135 mg.	Skin	Tumors[1678, 1679]	17 M & 22 F at 29 wks.	52 wks.
Bielschowsky, F., and Bielschowsky, M., 1960.	41 mice		20 M, 21 F	4% soln. in acetone for 90 applications, total 270 mg.	Skin	Tumors[1680, 1681]	Killed between 39th & 52nd wk.	52 wks.

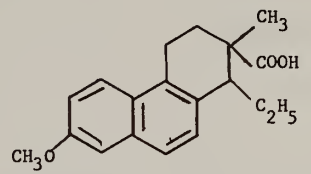
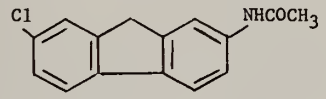
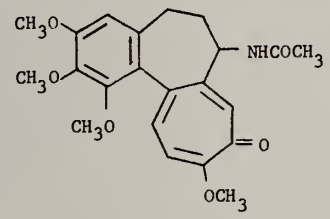
[14] No pathology given.
[1668] Otic squamous cell carcinoma.
[1667] 9 with tumors.
[1668] 1 otic carcinoma, 1 pituitary adenoma.
[1669] 16 semi-weekly ascorbic acid administration: 16 on 2.8 and 16 on 17.0 mg./100 gram body weight.
[1670] 1 pulmonary adenomatous lesion.
[1671] Thyroidectomized at 6 wks. of age.
[1672] 2 extrahepatic tumors.
[1673] Subtotal thyroidectomy at 6 wks. of age.
[1674] 1 hepatoma; 1 hepatic adenoma; 2 extrahepatic tumors.
[1676] 1 benign cholangioma; 1 hepatic adenoma; 2 hepatoma; 1 extrahepatic tumor.
[1678] 1 extrahepatic tumor.
[1677] 6 carcinomas, (3 invasive, 3 noninvasive). 3 benign urinary cystic tumors.
[1678] 1 urinary cystic tumor at 29 wks. Hepatomas in 7 males, and 6 females at 39–52 wks. 3 pyloric papillomas at 39–52 wks. 3 urinary cystic tumors at 39–52 wks.
[1679] 3/37 untreated controls with hepatomas, 1 duodenal tumor and 2 ovarian tumors.
[1680] Hepatomas in 13 males and 19 females. 5 benign pulmonary tumors. 12 enteric tumors. 8 mammary tumors. 4 urinary cystic tumors (2 malignant). 1 pelvic carcinoma. 1 renal tumor. 1 uterine tumor. 2 cholecystic papilloma.
[1681] 28 untreated controls with 11 pulmonary adenomas, 2 mammary tumors.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
463. ANTHRACENE 								
Druckrey, H., and Schmähl, D., 1955.	10 rats	BD		20 mg. wkly. in oil for 33 wks., total dose 660 mg.	S.C	Tumors[1682]	9 at 17 mos	
Schmähl, D., 1955	28 rats (100 d. old).	BDI, BDIII		In oil (in synthetic diet), 6 times a wk., 5–15 mg. until total dose of 4.5 g./rat for 550 d.[1683]	P.O	Tumors[1684]	700 d.	More than 1000 d.
Schmähl, D., 1955	10 rats (100 d. old).	BDI, BDIII		1 ml. of a 2% soln. in oil (20 mg.) wkly. for 33 wks. (total dose, 660 mg.).[1683]	I.P. (same place).	1 spindle cell sarcoma.		More than 2 yrs.
Schmähl, D., 1955	10 rats (100 d. old).	BDI, BDIII		1 ml. of a 2% soln. in oil (20 mg.) wkly. for 33 wks. (total dose, 660 mg.).[1683]	S.C. (same place).	Tumors[1685]	8 alive at 17 mos	29 mos.
Steiner, 1955	Mice	C57BL	M & F	5 mg. in tricaprylin	S.C., interscapular region.	0	26 at 4 mos	22–28 mos.
Salaman and Roe, 1956	20 mice	Albino "S" strain.		2 applications with a 30 min. interval of 0.5% soln. in acetone, thrice wkly. (Total dose 30.0 mg.)[1686]	Skin	3 (total of 4 pap.)	17 at 28 wks	Approx. 30 wks.
Shubik, P., and Della Porta, G., 1957.	5 mice	Swiss	M	25 mg. in 0.75 ml. olive oil as 3.3% partly soln. partly susp. once.	I.P	0	1 killed at 15 d., 4 alive at 5 mos.	5 mos.
464. 2-AMINOANTHRACENE[1687] 								
Lennox, B., 1955	47 mice	Albino, "Glaxo" strain.	M	0.05 ml. twice wkly. of various mixtures of carcinogen & croton oil, in strengths of 1%, 0.3%, & 0% in acetone, or the two agents were used alternately.	Skin	8[1688]	42 alive at appearance of first tumor (140 d.).	265 d.[1689]
Lennox, B., 1955	40 rats	Albino[1690]	M	Twice wkly. applications of a saturated soln. in acetone, 0.02 ml. until 27th d., 0.1 ml. 27–120th d., then raised steadily until 0.3 ml. at 300th d.[1691]	Lumbar skin between iliac spines.	39[1692]	Each killed on developing a 2nd tumor.	448 d.

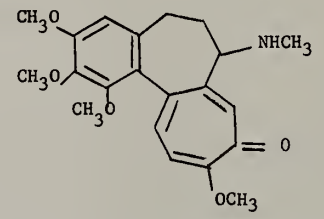
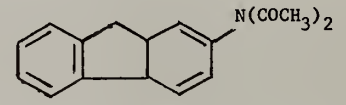
[1682] 5 injection site sarcoma; controls negative.
[1683] Chromatographed and recrystallized.
[1684] 1 hepatic sarcoma, 1 uterine adenocarcinoma (unrelated).
[1685] 1 injection site myxosarcoma at 17 months, 4 injection site sarcoma at 26 mos.
[1686] Weekly croton oil in acetone applications: 2 of 0.08%, 16 of 0.17%, began 25 days post-treatment.
[1687] 2-Anthramine.
[1688] 3 with hyperkeratosis, 3 squamous papillomas (1 multiple) 2 squamous carcinomas.
[1689] Survivors killed this data due to salmonella infection.
[1690] Investigators stock; high concentration. Wistar strain.
[1691] 50% changed to test material in 1% croton oil acetone at 102nd day. Slightly anticarcinogenic.
[1692] Dermal tumors: 35 sarcomas, 25 squamous cell tumors, 20 rodent tumors, 11 sebaceous tumors. 3 sarcomas (1 peritoneal). Probable relationship.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
464. 2-AMINOANTHRACENE (Continued)								
Clayson, D. B., et al., 1958	46 mice	Albino		12.5% in compressed paraffin wax pellet.	Implanted into the lumen of bladder.	Tumors[1427, 1693].	6 killed after 25 wks., 2 after 35 wks.	40 wks.
Zackheim, H. S., et al., 1959	5 guinea pigs	Albino	M	1% sat. soln. in acetone twice wkly., 0.15 cc. to 185 d., 0.3 cc. to 297 d. & then 0.25 cc. 5 d./wk. to 349 d.	Skin	0	3 sacrificed at 480 d., 2 at 652 d.	652 d.
Zackheim, H. S., et al., 1959	12 rats	Albino Fisher	M	0.15 cc. of 1% sat. soln. in acetone twice wkly.	Skin	0[1694]		240 d.
Zackheim, H. S., et al., 1959	12 mice	C-albino	M	0.05 cc. of 1% sat. soln. in acetone twice wkly.	Skin	Tumors[1695]		330 d.
Zackheim, H. S., et al., 1959	5 mice[56]		M	1% sat. soln. in acetone twice wkly., 0.025 cc. for 30 d., 0.05 cc. thereafter.	Skin	Tumors[1696]	5 at 210 d	330 d.
Zackheim, H. S., et al., 1959	6 mice[66]		F	1% sat. soln. in acetone twice wkly., 0.025 cc. for 30 d., 0.05 cc. thereafter.	Skin	Tumors[1697]	6 at 359 d	409 d.
Zackheim, H. S., et al., 1959	5 mice[1698]		F	1% sat. soln. in acetone twice wkly., 0.025 cc. for 30 d., 0.05 cc. thereafter.	Skin	Tumors[1699]	5 at 208 d	484 d.
Zackheim, H. S., et al., 1959	5 mice[56]		M	1% sat. soln. in acetone twice wkly., 0.1 cc. to 140 d., 0.05 cc. thereafter.	Skin	Tumors[1700]	5 at 444 d	447 d.
Zackheim, H. S., et al., 1959	8 mice[1698]		M	1% sat. soln. in acetone twice wkly., 0.025 cc. for 30 d., 0.05 cc. thereafter.	Skin	Tumors[1701]	8 at 202 d	456 d.
Zackheim, H. S., et al., 1959	4 rats[1698]	Albino Fisher	M	0.15 cc. of 1% sat. soln. in acetone twice wkly. for 320–382 d.	Skin	Tumors[1702]	4 at 320 d	382 d.
Zackheim, H. S., et al., 1959	3 rats[1703]	Albino Fisher	M	0.15 cc. of 1% sat. soln. in acetone twice wkly. for 180–240 d.	Skin	Tumors[1704]	3 at 180 d	240 d.
Zackheim, H. S., et al., 1959	7 rats[1705]	Albino Fisher	6 F & 1 M	0.1 cc. of 1% sat. soln. in acetone twice wkly. to 90 d., 0.2 cc. to 210 d., 0.3 cc. thereafter.	Skin	Tumors[1706]	7 at 186 d	305 d.
Zackheim, H. S., et al., 1959	10 rats[238]	Albino Fisher	M	1% sat. soln. in acetone twice wkly. for 180–401 d., 0.02 cc. increased to 0.15 cc. by 185 d.	Skin	Tumors[1707]	10 at 192 d	401 d.

[66] Age at start: 3 mos.
[238] Inoculation age: 4 months.
[1427] 56 paraffin controls developed 2 carcinomas, (1 invasive, 1 noninvasive).
[1693] 7 carcinomas (3 invasive, 4 noninvasive). 1 benign urinary cystic tumor.
[1694] Study of early dermal changes.
[1696] 1 squamous cell papilloma at 210 days. Study of early dermal changes.
[1696] 1 squamous cell papilloma.
[1697] 6 squamous cell epitheliomas, 1 fibrosarcoma.
[1698] Age: 2 mos.
[1699] 5 squamous cell epitheliomas.
[1700] 1 squamous cell papilloma, 4 squamous cell epitheliomas.
[1701] 1 squamous cell papilloma, 5 squamous cell epitheliomas.
[1702] 4 squamous cell epitheliomas, 4 basal cell epitheliomas, 2 sebaceous adenomas, 1 "cylindroma".
[1703] Age: 5 months.
[1704] 1 basal cell epithelioma.
[1706] Age: 5–8 months.
[1706] 5 basal cell epitheliomas.
[1707] 3 squamous cell papillomas, 5 squamous cell epitheliomas, 10 basal cell epitheliomas, 4 sebaceous adenomas, 3 sebaceous epitheliomas, 2 "cylindromas", 4 fibrosarcomas, 1 primarily myxosarcoma.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
464. 2-AMINOANTHRACENE (Continued)								
Ghadially, F. N., 1960	Rats	Albino		Saturated soln. in acetone at wkly. intervals for 9 mos.	Skin	Tumors[1708]		At least 9 mos.
Shubik, P., et al., 1960	20 hamsters	Syrian golden	10 āā	4 drops of 1% soln. in acetone twice wkly. for 10 wks., 8 drops for following 40 wks., reduced to 4 drops for final 5 wks.	Skin	Tumors[1709]	7 M, 7 F at 50 wks.	80 wks.
465. BISDEHYDRODOISYNOLIC ACID 7-METHYL ETHER[1710] 								
Bacon, R. L., and Kirkman, H., 1955.	Hamsters		M	20 mg. compressed pellet implanted at least 382 d.	S.C. implant	0^{14}		At least 382 d.
Kirkman, H., 1959	12 hamsters	Syrian	M	20 mg. pellets for avg. 397 d	Subpannicular implant.	Tumors[4684]		Up to 467 d.
466. N-(7-CHLORO-2-FLUORENYL) ACETAMIDE 								
Morris, H. P., et al., 1960	10 rats[1711]	Buffalo	F	0.005% in diet for avg. 2.5 mos. avg. daily intake 3.3 mg.	P.O	Tumors[1712, 1713]	Avg. age 5.7 mos	5 mos.
467. COLCHICINE 								
Sternberg, S. S., et al., 1954	10 rats	Wistar	M & F	0.1 mg./kg. 5 times a wk., increased to 1.6 mg./kg. in 5th wk.	I.P	0	Sacrificed during 4 & 5 wks.	5 wks

[14] No pathology given.
[1708] 5 dermal fibrosarcoma.
[1709] 9 papillomas, 1 retroperitoneal sarcoma, 1 splenic hemangioma; 23 epidermal tumors, 2 dermal fibrosarcoma (males). Melanotic lesions, no details.
[1710] 7-Methyl bisdehydrodoisynolic acid.
[1711] Age: 2.5 months avg.
[1712] 1 with multiple hepatomas, 1 hepatic hemangioma.
[1713] Of 36 untreated controls, 8 pituitary and 5 adrenal adenomas, 1 renal adenoma, 1 uterine adenocarcinoma, 1 inguinal fibroma and 1 leukemia.
[4684] 1 with malignant renal tumor.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
467. COCHICINE (Continued)								
Barsoum, H., 1955	Rabbits		M	1.5 or 3.0 mg. twice a wk. for 15 wks.	S.C	0[1714]		15 wks.
Roe and Salaman, 1955	10 mice	Stock albino "S" strain.	M	0.3 ml. of 0.33% soln. in acetone, once. (Total dosage: 1.0 mg.).[1715]	Skin	0	All alive at 21 wks.	At least 22 wks.
Roe and Salaman, 1955	10 mice	Stock albino "S" strain.	M	0.3 ml. of 0.08% soln. in acetone, wkly. for 15 wks. (Total dosage: 3.6 mg.)[299]	Skin	1 (skin tumor).	8 alive at 18 wks	At least 19 wks.
468. DESACETYLMETHYLCOLCHICINE[1716] 								
Cattaneo, I., 1955	4 rabbits			0.5 mg. daily for 60 d	I.M	0[1717]	Sacrificed at 60 d	60 d.
Pizzetti, F., et al., 1956	3 rabbits			0.25 mg. every second d. for 29 d	I.M	0[1718]	Killed 24 hr. after last inj.	30 d.
469. N,N-DIACETYL-2-AMINOFLUORENE[1719] 								
Griffin, A. Clark, et al., 1955	Rats			Unspecified amt. in diet for 8–10 wks.	P.O	Tumors[1527]		At least 10 wks.
Griffin, A. Clark, et al., 1955	Rats[1720]			Unspecified amt. in diet for 16–20 wks.	P.O	0		20 wks.
Morris and Firminger, 1956	8 rats[1721]	A X C	F	Diet containing 0.05% 2-diAFF (214 mg./kg. body wt./wk.).[1722]	P.O	0[1723]	Survival time poor.	6 wks.
Morris and Firminger, 1956	8 rats	A X C	F	Diet containing 0.05% 2-diAFF (213 mg./kg. body wt./wk.).	P.O	1[1724]	Survival time very poor.	6 wks.

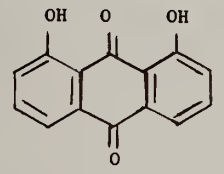
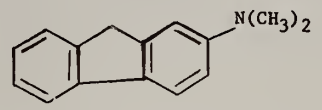
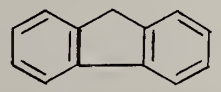
[299] 18 weekly applications 0.3 ml. of 0.5% croton oil in acetone solution; first alternated (3–4 day intervals) with applications of test substance.
[1527] Hepatic, no details.
[1714] Testicular atrophy.
[1715] 18 weekly applications of 0.3 ml. of 0.5% croton oil in acetone.
[1716] Demecolcine.
[1717] Histological hepatic, renal, gastric, and enteric study.
[1718] Lymphatic hypertrophy.
[1719] N–2-Fluorenyldiacetamide; 2-diacetylaminofluorene.
[1720] Hypophysectomized.
[1721] Castrated 10 days before experiment.
[1722] 2-Diacetylaminofluorene.
[1723] 1 cirrhosis.
[1724] 1 hepatoma, 1 with cirrhosis.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
469. N,N-DIACETYL-2-AMINOFLUORENE[1719] (Continued)								
Morris and Firminger, 1956	7 rats[1725]	A X C	M	Diet containing 0.05% 2-diAFF (212 mg./kg. body wt./wk.)[1726]	P.O.	2[1727]	Survival time very poor.	6 wks.
Morris and Firminger, 1956	6 rats[198]	A X C	M	Diet containing 0.05% 2-diAFF (164 mg./kg. body wt./wk.)	P.O.	2[1728]	Survival time very poor.	6 wks.
Morris and Firminger, 1956	5 rats	A X C	M	Diet containing 0.05% 2-diAAF (166 mg./kg. body wt./wk.)	P.O.	3[1729]	Survival time poor.	6 wks.
Morris and Firminger, 1956	7 rats[1721]	A X C	F	Diet containing 0.05% 2-diAFF (217 mg./kg. body wt./wk.)[1730]	P.O.	6[1731]	Survival time poor.	6 wks.
Morris and Firminger, 1956	8 rats	A X C	F	Diet containing 0.05% 2-diAFF (126 mg./kg. body wt./wk.) during wkly. periods alternating with 1 wk. periods on regular control diet.	P.O.	1[1732]		13½ mos.
Morris and Firminger, 1956	6 rats	A X C	F	Diet containing 0.05% 2-diAFF (159 mg./kg. body wt./wk.) for two 3½–4 wk. periods interrupted by a 3 wk. period of control diet.	P.O.	0[1733]	4 alive at approx. 17 wks.	5 mos.
Morris and Firminger, 1956	7 rats[1721]	A X C	M	Diet containing 0.05% 2-diAFF (129 mg./kg. body wt./wk) for two 3½–4 wk. periods interrupted by a 3 wk. period of control diet.	P.O.	1[1734]	First died at 11 wks.	5 mos.
Morris and Firminger, 1956	8 rats	A X C	M	Diet containing 0.05% 2-diAFF (123 mg./kg. body wt./wk.) for 4 wks., followed by 3 of regular diet, followed by another 3½ wks. on carcinogen diet.	P.O.	7[1735]		At least 12 mos.
Morris and Firminger, 1956	5 rats[1725]	A X C	M	Diet containing 0.05% 2-diAFF (170 mg./kg. body wt./wk.) for two 3½–4 wk. periods interrupted by a 3 wks. period of control diet.[1726]	P.O.	0[1736]	All alive throughout experiment.	5 mos.
Morris and Firminger, 1956	12 rats[1725]	A X C	F	Diet containing 0.05% 2-diAFF (165 mg./kg. body wt./wk.) for two 3½–4 wk. period interrupted by a 3 wk. period of control diet.	P.O.	0[1737]	All alive throughout experiment.	5 mos.
Morris and Firminger, 1956	4 rats[1726]	A X C	F	Diet containing 0.05% 2-diAFF (135 mg./kg. body wt./wk.) for two 3½–4 wk. periods interrupted by a 3 wk. period on control diet.[1730]	P.O.	3[1738]	3 dead at 10 wks.	20 wks.

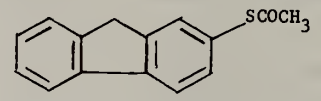
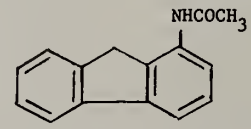
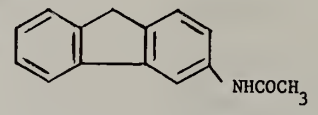
[198] Castrated.
[1719] N–2-Fluorenyldiacetamide; 2-diacetylam nofluorene.
[1721] Castrated 10 days before experiment.
[1725] Castrated 10 days before experiment (age: 2–4 mos.).
[1726] S.C. pellet implant (1:3 diethylstilbestrol: cholesterol) at 20 mg./100 gram body weight on first day.
[1727] 2 hepatomas, 2 nodular hyperplasia, 1 cirrhosis.
[1728] 2 with hepatomas, 3 cirrhosis.
[1729] 3 with hepatomas, 2 nodular hyperplasia, 5 cirrhosis.
[1730] S.C. pellet implant (1:3 testosterone propionate: cholesterol) at 20 mg./100 grams body weight on first day.
[1731] 6 with hepatomas, 7 cirrhosis.
[1732] 1 with hepatocellular carcinoma. 7 with portal cirrhosis.
[1733] 1 death at 16 wks. with portal cirrhosis and cholangeal proliferation.
[1734] 1 with multiple hepatomas. 1 nodular hyperplasia, 2 portal cirrhosis.
[1735] 7 with hepatomas, all with cirrhosis.
[1736] 1 nodular hyperplasia, 1 cirrhosis.
[1737] 1 with portal cirrhosis.
[1738] 3 with hepatocellular carcinomas, 3 with cirrhosis.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
469. N,N-DIACETYL-2-AMINOFLUORENE (Continued)								
Morris and Firminger, 1956	10 rats[1721]	A X C	F	Diet containing 0.05% 2-diAFF (126 mg./kg. body wt./wk.) during wkly. periods alternating with 1 wk. periods of regular control diet.[1730]	P.O.	6[1739]	8 alive at 7½ mos.	13½ mos.
Richardson, H. L., and O'Neal, M. A., 1957.	20 rats[1720]	Sprague-Dawley.		Unspecified amount in diet for 24 wks.	P.O.	Tumors[1740]		24 wks.
Richardson, H. L., and O'Neal, M. A., 1957.	20 rats	Sprague-Dawley.		Unspecified amt. in diet for 24 wks.	P.O.	Tumors[1741]		24 wks.
Hoffman, H. E., and Griffin, A. C., 1958.	24 rats	Sprague-Dawley.	M	0.05% in semi-synthetic diet for 8 & 14 wks.	P.O.		9 at 8 wks., 4 at at 14 wks.	14 wks.
Hoffman, H. E., and Griffin, A. C., 1958.	36 rats	Albino	M	0.04% in semi-synthetic diet for 14 wks.	P.O.	Tumors[1742]		14 wks. or more.
O'Neal, M. A., et al., 1958	45 rats	Albino	M	0.05% in semisynthetic diet for 6, 8, & 12 wks.	P.O.	0	6/8 at 6 wks., 24/25 at 8 wks., 9/12 at 12 wks.	12 wks.
O'Neal, M. A., et al., 1958	30 rats	Albino	M	0.04% in semisynthetic diet for 30 wks., given 7.5 milliunits daily s.c. & 0.5 unit ACTH daily, s.c.	P.O.	Tumors[1743]	14 at 30 wks	30 wks.
O'Neal, M. A., et al., 1958	30 rats[1720]	Albino	M	0.04% in semisynthetic diet for 30 wks.	P.O.	Tumors[1744]	0	Less than 30 wks.
O'Neal, M. A., et al., 1958	15 rats	Albino	M	0.04% in semisynthetic diet for 22 wks., given 7.5 milliunits daily s.c. & 0.5 unit ACTH daily s.c.	P.O.	Tumors[1745]	7 at 22 wks	22 wks.
O'Neal, M. A., et al., 1958	5 rats	Albino	M	0.05% in semisynthetic diet for 22 wks., given 7.5 milliunits daily s.c.	P.O.	0	3 at 22 wks	22 wks.
O'Neal, M. A., et al., 1958	15 rats[1720]	Albino	M	0.04% in semisynthetic diet for 22 wks.	P.O.	Tumors[1746]	6	22 wks.
O'Neal, M. A., et al., 1958	40 rats[1720]	Albino	M	0.04% in semisynthetic diet for 22 wks.	P.O.	Tumors[1747]	20	22 wks.
O'Neal, M. A., et al., 1958	21 rats	Albino	M	0.04% in semisynthetic diet for 22 wks.	P.O.	Tumors[1748]	21	22 wks.
O'Neal, M. A., et al., 1958	11 rats	Albino	M	0.05% in semisynthetic diet for 26 wks., given 2 units ACTH every other d. s.c.	P.O.	0	3 at 26 wks	26 wks.

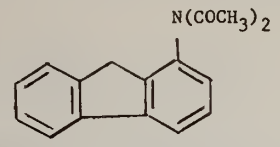
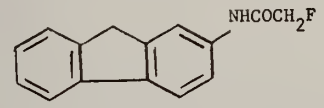
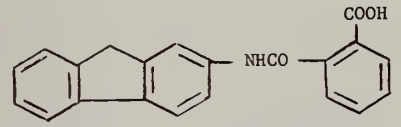
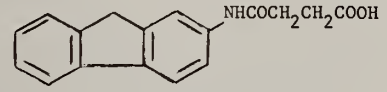
[1719] N-2-Fluorenyldiacetamide, 2-diacetylaminofluorene.
[1720] Hypophysectomized.
[1721] Castrated 10 days before experiment.
[1730] S.C. pellet implant (1:3 testosterone propionate, cholesterol) at 20 mg./100 gram body weight on first day.
[1739] 4 with hepatocellular carcinomas (1 with pulmonary and abdominal lymphatic metastases). 1 with malignant cholangiohepatoma. 8 with portal cirrhosis.
[1740] 12 with intraorbital lacrimal adenocarcinoma (1 with cervical metastases). 2 with otic epidermoid carcinoma.
[1741] 100% cirrhosis, 10 hepatocarcinomas, 5 cholangeal carcinomas, 1 hepatoma, 2 otic epidermoid carcinoma.
[1742] 23/32 with hepatic tumors.
[1743] 6 Harderian gland tumors.
[1744] 3 with Harderian tumors.
[1745] 1 Harderian gland tumor.
[1746] 2 Harderian gland tumors.
[1747] 7 Harderian gland tumors.
[1748] 21 with hepatic tumors, 4 otic tumors.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
469. N,N-DIACETYL-2-AMINOFLUORENE (Continued)								
O'Neal, M. A., et al., 1958	10 rats[1720]	Albino	M	0.05% in semisynthetic diet for 26 wks.	P.O	Tumors[1746]	5 at 26 wks	26 wks.
O'Neal, M. A., et al., 1958	20 rats	Albino	M	0.05% in semisynthetic diet for 11–18 wks., given 2 units ACTH every other d. s.c.	P.O	0	14 at 18 wks	18 wks.
O'Neal, M. A., et al., 1958	20 rats[1720]	Albino	M	0.05% in semisynthetic diet for 11–18 wks.	P.O	0	13	18 wks.
O'Neal, M. A., et al., 1958	10 rats[1720]	Albino	M	0.05% in semisynthetic diet for 8 wks., given 2 units ACTH every other d. s.c.	P.O	0	6 at 8 wks	8 wks.
O'Neal, M. A., et al., 1958	10 rats[1720]	Albino	M	0.05% in semisynthetic diet for 8 wks.	P.O	0	6/10 at 8 wks	8 wks.
O'Neal, M. A., et al., 1958	18 rats	Albino	M	0.05% in semisynthetic diet for 18 wks.	P.O	Tumors[1749]	15	18 wks.
470. 1,8-DIHYDROXYANTHRAQUINONE 								
Schmidt, L., 1955	6 rats			600 mg./kg. daily in food	P.O	0	100%	3 mos.
471. N-DIMETHYL-2-AMINOFLUORENE 								
Weisburger, E. K., et al., 1956.	18 rats	Buffalo	F	Avg. 10.0–11.5 mg./kg. body wt. in diet up to 76 wks.	P.O	Tumors[1750]	5 at 55 wks	76 wks.
472. FLUORENE 								
Graffi, A., et al., 1953	100 mice		M	3 drops 3% in acetone once wkly. followed by 1 drop 5% croton oil in mineral oil once wkly.	Skin	0	4 at 12th mo	12 mos.

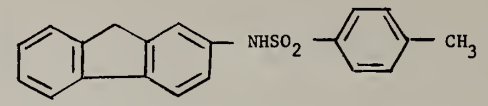
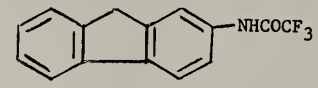
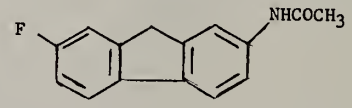
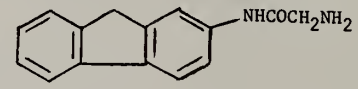
[1719] N–2-Fluorenyldiacetamide, 2-diacetylaminofluorene.
[1720] Hypophysectomized.
[1746] 2 Harderian gland tumors.
[1749] Cholangeal proliferation and cysts. Hepatoma foci. 50% survivors with otic tumors.
[1750] 11 with 15 mammary tumors. 9 with hepatic tumors, 2 with otic tumors, 2 with uterine tumors, 2 pituitary tumors.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
472. FLUORENE (Continued)								
Shubik, P., and Della Porta, G., 1957.	5 mice	Swiss	M	25 mg. in 0.75 ml. olive oil as 3.3% soln. once.	I.P	0	1 killed at 5 d. 4 alive at 5 mos.	5 mos.
Morris, H. P., et al., 1960	20 rats[1751]	Buffalo	F	0.05% in diet for 5.0–6.2 mos., avg. daily intake 4.3 mg.	P.O	0[1752,1753]	Avg. age 10.2 mos.	7 mos.
Morris, H. P., et al., 1960	18 rats[1754]	Buffalo	F	0.05% in diet for 4.1–19 mos., avg. daily intake 4.6 mg.	P.O	0[1753,1755]	Avg. age 19.0 mos.	19 mos.
473. FLUORENE-2-THIOL, ACETATE 								
Argus, M. F., and Ray, F. E., 1956.	25 mice	C3H	F	Unspecified amt. for 20 wks	P.O	0		At least 20 wks.
Argus, M. F., and Ray, F. E., 1956.	25 mice	C3H	M	Unspecified amt. for 20 wks	P.O	Tumors[1755]		At least 20 wks.
474. N-1-FLUORENYLACETAMIDE 								
Morris, H. P., et al., 1960	18 rats[1757]	Buffalo	F	0.025% in diet for 4.5–11.0 mos., avg. daily intake 2.8 mg.	P.O	Tumors[1758, 1759].	Avg. age 17.2 mos.	At least 19 mos.
475. N-3-FLUORENYLACETAMIDE 								
Morris, H. P., et al., 1960	18 rats[1750]	Buffalo	F	0.025% in diet for 9.2–17.7 mos., avg. daily intake 2.6 mg.	P.O	Tumors[1751, 1752].	Avg. age. 18.9 mos.	17.7 mos.
Morris, H. P., et al., 1960	18 rats[1751]	Buffalo	F	0.025% in diet for 3.4–14.3 mos., avg. daily intake 2.6 mg.	P.O	Tumors[1753, 1759].	Avg. age 18.6 mos.	About 19 mos.

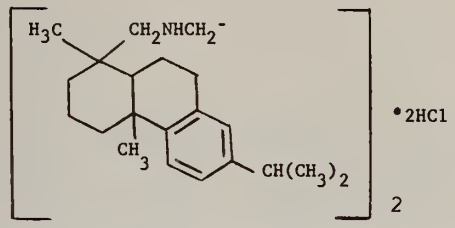
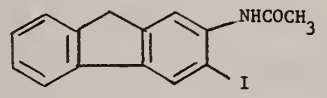
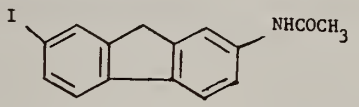
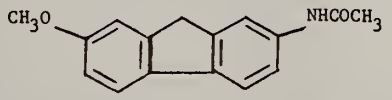
[1751] Age: 3 mos. avg.
[1752] 1 renal squamous cell carcinoma, 1 ureteral squamous cell carcinoma.
[1753] 18 comparable tumors in untreated controls.
[1754] Age: 0.9 mos. avg.
[1755] 1 uterine fibrosarcoma, 1 uterine carcinosarcoma, 1 granulocytic leukemia, 4 pituitary adenomas.
[1756] 1 lymphoma.
[1757] Age: 2.2 mos. avg.
[1758] 1 ovarian granulosa cell carcinoma, 1 uterine carcinosarcoma, 1 adrenal carcinoma, 3 pituitary adenomas, 1 leukemia.
[1759] 18 untreated controls with 2 pituitary adenomas, 1 renal adenoma and 1 leukemia.
[1750] Age: 3.4 mos. avg.
[1751] 1 with uterine adenocarcinoma, 1 hepatoma and 1 renal adenoma, 1 granulocytic leukemia, 2 thyroid adenomas.
[1752] 36 untreated controls with 8 pituitary and 5 adrenal adenomas, 1 renal adenoma, 1 uterine adenocarcinoma, 1 inguinal fibroma and 1 leukemia.
[1753] Uterine myxosarcoma (or liposarcoma), 1 leukemia, 1 mammary adenofibroma. (Relationship doubtful).

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
476. N-1-FLUORENYLDIACETAMIDE 								
Morris, H. P., et al., 1960	18 rats[1764]	Buffalo	16 F, 2 M	0.025% in diet for 8.3–12.4 mos., avg. daily intake 2.8 mg.	P.O.	Tumors[1769, 1765].	Avg. age 19.1 mos.	Up to 17 mos.
477. N-(2-FLUORENYL)2-FLUOROACETAMIDE 								
Morris, H. P., et al., 1960	9 rats[1766]	Buffalo	7 F, 2 M	0.031% in diet for 4.1–9.4 mos., avg. daily intake 2.2 mg.	P.O.	Tumors[1762, 1767].	Avg. age 8.9 mos.	At least 9.4 mos.
478. N-(2-FLUORENYL) PHTHALAMIC ACID 								
Morris, H. P., et al., 1960	17 rats	Buffalo	F	Dissolved in corn oil & mixed in diet at 1.27 mmole/kg. level for 9.9 mos.	P.O.	Tumors[1768]	12 at 18 mos.	18 mos.
479. N-2-FLUORENYL-SUCCINAMIC ACID 								
Morris, H. P., et al., 1960	18 rats[1769]	Buffalo	F	0.025% in diet for 9.3–23.7 mos., avg. daily intake 2.4 mg.	P.O.	Tumors[1770, 1762].	Avg. age 20.1 mos.	Up to 20 mos.

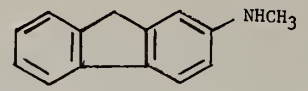
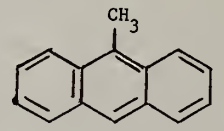
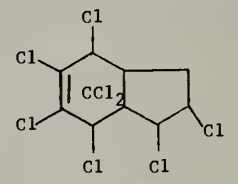
[1769] 18 untreated controls with 2 pituitary adenomas, 1 renal adenoma and 1 leukemia.
[1762] 36 untreated controls with 8 pituitary and 5 adrenal adenomas, 1 renal adenoma, 1 uterine adenocarcinoma, 1 inguinal fibroma and 1 leukemia.
[1764] Age: 1.9 mos. avg.
[1765] 3 mammary adenocarcinomas, 7 pituitary adenomas, 1 uterine fibrosarcoma, 1 hepatic hemangioma, 1 otic squamous cell carcinoma, 1 lymphosarcoma.
[1766] Age: Females 1.9 mos., males 1.7 mos. (avg.).
[1767] 1 hepatoma, 1 myohemangioma.
[1768] 12 with hepatic tumors, 1 transplantable carcinoma.
[1769] Age: 3.8 mos. avg.
[1770] 6 hepatomas, 1 hepatic lymphangioma, 1 mediastinal fibrosarcoma, 1 uterine adenocarcinoma, 1 reticulum cell sarcoma. 1 mammary tumor, 2 leukemias.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
480. N-2-FLUORENYL-p-TOLUENESULFONAMIDE 								
Morris, H. P., et al., 1960	10 rats[1751]	Buffalo	F	0.05% in diet for 1.9–6.2 mos. avg., daily intake 4.0 mg.	P.O	0[1771]	Avg. age 8.7 mos	34 wks.
481. N-(2-FLUORENYL)2,2,2-TRI-FLUOROACETAMIDE 								
Morris, H. P., et al., 1960	18 rats[1772]	Buffalo	F	0.027% in diet for 7.8–12.2 mos., avg. daily intake 2.4 mg.	P.O	Tumors[1773], [1762].	Avg. age 13.5 mos	At least 12.2 mos.
482. 7-FLUORO-2-ACETYLAMINOFLUORENE 								
Miller, J. A., et al., 1954	18 rats		M	0.83 mg./kg. diet for 14 wks	P.O	Tumors[1774]	7 at 23 wks	23 wks.
Miller, E. C., et al., 1958	18 rats	Albino	M	0.02% of grain diet for 14.5 wks	P.O	Tumors[1775]	7 at 23 wks	32 wks.
483. 2-GLYCYLAMINOFLUORENE 								
Argus, M. F., and Ray, F. E., 1959.	20 rats	Wistar	M	3 mg. in 1 ml. 1% methylcellulose 5 times wkly. for 20 wks.	P.O., stomach tube.	Tumors[1776]		At least 57 wks.

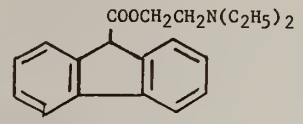
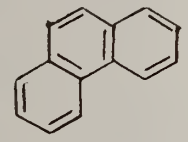
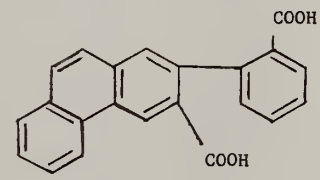
[1751] Age: 3 mos. avg.
[1762] 36 untreated controls with 8 pituitary and 5 adrenal adenomas, 1 renal adenoma, 1 uterine adenocarcinoma, 1 inguinal fibroma and 1 leukemia.
[1771] 1 uterine adenocarcinoma.
[1772] Age: 3.3 mos. avg.
[1773] 14 with mammary tumors: 32 adenocarcinomas, 1 fibrosarcoma, 1 fibroma, 1 carcinosarcoma, 1 squamous cell carcinoma. 13 hepatomas, 7 otic squamous cell carcinomas. 1 adrenocortical adenoma. 3 uterine sarcomas. 2 enteric adenocarcinoma. 2 forestomach squamous cell carcinomas. 2 granulocytic leukemia.
[1774] 7 with hepatic tumors, 2 otic tumors, 1 enteric tumor.
[1775] 7 with hepatic tumors, 2 with otic tumors, 1 with enteric tumors, at 32 weeks.
[1776] 6 with cystic cholangiomas, 1st at 57 wks.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
484. HYDRABAMINE DIHYDROCHLORIDE 								
DeRose, A. F., et al., 1955	2 dogs			Varying doses based on units of penicillin potency, in diet.	P.O.	0		
DeRose, A. F., et al., 1955	7 rats[47]		M	Varying doses based on units of penicillin potency, in diet.	P.O.	0		
485. N-(3-IODO-2-FLUORENYL) ACETAMIDE 								
Morris, H. P., et al., 1960	18 rats[1769]	Buffalo	F	0.025% in diet for 2.1–12.5 mos., avg. daily intake 2.2 mg.	P.O.	Tumors[1777]	Avg. age 13.6 mos.	At least 12.5 mos.
486. N-(7-IODO-2-FLUORENYL) ACETAMIDE 								
Morris, H. P., et al., 1960	20 rats[1757]	Buffalo	F	0.05% in diet for 2.6–6.2 mos., avg. daily intake 3.7 mg.	P.O.	0[1778]	Avg. age 9.7 mos.	Over 1 yr.
487. N-(7-METHOXY-2-FLUORENYL)ACETAMIDE 								
Morris, H. P., et al., 1960	18 rats[1779]	Buffalo	F	0.028% in diet for 2.3–12.2 mos., avg. daily intake 2.6 mg.	P.O.	Tumors[1759, 1780]	Avg. age 15.5 mos.	1 yr.

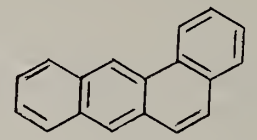
[47] Young.
[1757] Age: 2.2 mos. avg.
[1759] 18 untreated controls with 2 pituitary adenomas, 1 renal adenoma and 1 leukemia.
[1769] Age: 3.8 mos. avg.
[1777] 8 with 14 otic squamous cell carcinomas. 1 uterine adenocarcinoma, 1 mammary adenocarcinoma, 1 pulmonary adenoma, 1 pulmonary adenocarcinoma, 1 reticulum cell sarcoma, 2 leukemias.
[1778] 1 pituitary adenoma.
[1779] Age: 4.7 mos. avg.
[1780] 7 with 12 mammary adenocarcinomas, 3 otic squamous cell carcinomas, 1 enteric adenocarcinoma, 1 thyroid adenocarcinoma, 1 granulocytic leukemia, 1 pulmonary adenocarcinoma.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
488. 2-METHYLAMINLFLUORENE 								
Weisburger, E. K., et al., 1956.	18 rats	Buffalo	F	Over—9.6–12.2 mg./kg. body wt. in diet up to 75 wks.	P.O	Tumors[1781]	1 at 61 wks	75 wks.
489. 9-METHYLANTHRACENE 								
Hadler, H. I., et al., 1959	20 mice	Swiss	F	0.02 ml. of 0.23% soln. in acetone twice wkly. for 60 wks.	Skin	0	15 at 60 wks	60 wks.
Hadler, H. I., et al., 1959	20 mice	Swiss	F	0.75 μg. dissolved in 50 μl. of acetone soln. once.[1782]	3.5 cm.² of skin	0[1783]	8 at 60 wks	60 wks.
Hadler, H. I., et al., 1959	18 mice	Swiss	F	0.75 μg. dissolved in 50 μl. of acetone soln. once.	3.5 cm.² of skin	0	9 at 60 wks	60 wks.
490. 1,2,4,5,6,7,8,8-OCTACHLORO-4,7-METHANO-3a,4,7,7a-TETRAHYDRO-INDAN[1784] 								
Ingle, L., 1954	Calves			1–1½ gals. of 2% and 0.5% emulsified concentrate sprayed every 2 wks. for 12 times, 2500 cc. remained on animal.	Skin	0		24 wks.
Ingle, L., 1956	Mice			Air passing over compound for 25 & 30 d.	Inhalation	0[1785]		30 d.
Ingle, L., 1956	Rats			300 ppm	P.O	0[1786]		At least 12 wks.
Ortega, P., et al., 1957	12 rats	Sherman white	6 āā	2.5 ppm. in diet up to 9 mos.[1787]	P.O	0[1788]	Killed at intervals	9 mos.
Ortega, P., et al., 1957	12 rats	Sherman white	6 āā	25 ppm. in diet up to 9 mos.[1787]	P.O	0[1788]	Killed at intervals	9 mos.

[1781] 9 with 18 mammary tumors. 8 with 8 hepatic tumors. 5 with 6 otic tumors. 1 with uterine tumor. 1 with gastric tumor. 1 adrenal tumor. 1 sarcoma.
[1782] Semi-weekly administration of 0.2 ml., 0.5% croton seed fraction acetone begun 1 wk. later.
[1783] 2 with 3 papillomas/animal at 60 wks. 3/40 croton seed fraction controls with 5 papillomas and 1 dermal carcinoma.
[1784] Chlordane.
[1785] Non-toxic.
[1786] Toxicity at 12 wks.
[1787] Chlordane 60–75% pure.
[1788] Hepatic cell changes.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
491. PAVATRINE 								
Morris, H. P., et al., 1960	20 rats[1789]	Buffalo	F	0.05% in diet for 4.3–6.2 mos., avg. daily intake 4.2 mg.	P.O.	0	Avg. age 10.3 mos.	At least 6.2 mos.
492. PHENANTHRENE 								
Graffi, A., et al., 1953	100 mice		M	3 drops 3% in acetone once wkly. followed by 1 drop 5% croton oil in mineral oil once wkly.	Skin	Tumors[1665]	6 at 12th mo	12 mos.
Steiner, 1955	Mice	C57BL	M & F	5 mg. in tricaprylin	S.C., interscapular region.	0	27 at 4 mos	22–28 mos.
Salaman & Roe, 1956	20 mice	Albino "S" strain.		10 thrice wkly. applications of 18.0% soln. in acetone (total dose 0.54 g.)[1686].	Skin	5 (total of 12 pap.)	20 at 25 wks	Approx. 27 wks.
493. 2-PHENYLPHENANTHRENE-3:2′-DICARBOXYLIC ACID 								
Allen, M. J., et al., 1957	20 mice			1 part/4 parts cholesterol in 9–11 mg. pellet implant.	Urinary bladder	0[1422,1790]	14 at 40 wks	At least 40 wks.

[1422] 1/24 cholesterol controls with urinary cystic carcinoma.
[1665] 1 papilloma.
[1686] Weekly croton oil in acetone applications: 2 of 0.08%, 16 of 0.17%, began 25 days post-treatment.
[1789] Age: 4.0 mos. avg.
[1790] 1 urinary cystic carcinoma.

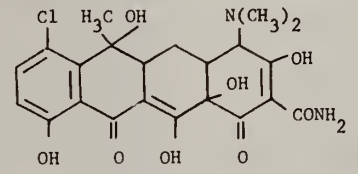
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
494. 1,2-BENZANTHRACENE 								
Graffi, A., et al., 1953	75 mice		M	3 drops 0.5% once a wk. in acetone, 1 drop 5% croton oil in mineral oil once a wk.	Skin	Tumors[1791]	9 at 12th mo	12 mos.
Kocke, H. U., 1953	21 mice (15–20 g.)	Albino		1 mg. in 4% agar (8 mm.^{3})	S.C. implant	0	2 at 175 d	15 mos.
Roe and Salaman, 1955	10 mice	Albino "S" strain.	M	2 wkly. doses of 0.3 ml. of 1% soln. in acetone (Total dose: 6.0 mg.)	Skin	0	8 at end of experiment.	
Roe and Salaman, 1955	20 mice	Albino "S" strain.	M	2 wkly. doses of 0.3 ml. of 1% soln. in acetone (Total dose: 6.0 mg.)[318]	Skin	7 (21 skin tumors).	18 at 21 wks	At least 22 wks.
Steiner, 1955	Mice	C57BL	M & F	5 mg. in tricaprylin	S.C., interscapular region.	20 sarcomas (55%).	36 at 183 d	22–28 mos.
Steiner, 1955	Mice	C57BL	M & F	10 mg. in tricaprylin	S.C., interscapular region.	5 sarcomas (31%).	16 at 297 d	22–28 mos.
Steiner, 1955	Mice	C57BL	M & F	1 mg. in tricaprylin	S.C., interscapular region.	15 sarcomas (34%).	44 at min. induction time.	22–28 mos.
Steiner, 1955	Mice	C57BL	M & F	0.2 mg. in tricaprylin	S.C., interscapular region.	11 sarcomas (24%).	45 at min. induction time.	22–28 mos.
Steiner, 1955	Mice	C57BL	M & F	0.05 mg. in tricaprylin	S.C., interscapular region.	5 sarcomas (11%).	44 at min. induction time.	22–28 mos.
Orr, J. W., 1956	Mice		1 F		Skin	0		
Bock, F. G. and King, D. W., 1959.	Mice[1792]	C57BL		0.5 mg. in 0.1 ml. heavy mineral oil 8 times at 3 to 7 d. intervals.	P.O., stomach tube.	Tumors[1793]	19 "effective" total.	16 mos.
Bock, F. G., and King, D. W., 1959.	Mice[1792]	C57BL		0.5 mg. in 0.1 ml. heavy mineral oil 16 times at 3 to 7 d. intervals.	P.O., stomach tube.	Tumors[1793]	8 "effective" total.	16 mos.
Bock, F. G., and King, D. W., 1959.	Mice[1792]	C57BL		0.5 mg. in 0.1 ml. heavy mineral oil once.	P.O., stomach tube.	0	13 "effective" total.	16 mos.
Hadler, H. I., et al., 1959	20 mice	Swiss	F	0.9 μg. dissolved in 50 μl. of acetone soln. once.	3.5 cm.^{2} of skin	0	16 at 60 wks	60 wks.

[318] 18 weekly applications of 0.3 ml. of 0.5% croton oil in acetone solution begun 3 weeks post-treatment.

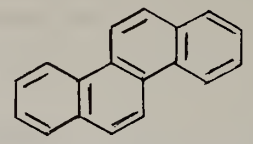
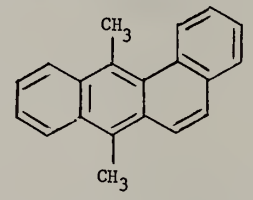
[1791] 18 papillomas.

[1792] Food withheld 24 hours before treatment.

[1793] 1 forestomach papilloma, 16 mineral oil controls negative.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
494. 1,2-BENZANTHRACENE (Continued)								
Hadler, H. I., et al., 1959	20 mice	Swiss	F	0.02 ml. of 0.27% soln. in acetone twice wkly. for 60 wks.	Skin	Tumors[1794]	15 at 60 wks	89 wks.
Hadler, H. I., et al., 1959	20 mice	Swiss	F	0.9 μg. dissolved in 50 μl. of acetone soln. once.[1782]	3.5 cm.² of skin	Tumors[1795, 1796]	10 at 60 wks	60 wks.
Shubik, P., et al., 1960	10 hamsters	Syrian golden	5 ää	8 drops of 0.5% soln. in mineral oil twice wkly. for 10 wks.	Skin	0	3 F, 3 M at 50 wks., 1 M at 85 wks.	85 wks.
Roe and Salaman	10 mice	Albino "S" strain.	M	0.3 ml. of 1% soln. in acetone, wkly. for 15 wks. (Total dose: 45.0 mg.)	Skin	0	9 at end of experiment.	
495. CHLORTETRACYCLINE 								
Nelson, A. A., and Radomski, J. L., 1954.	4 dogs[1797]	Mongrel		250 mg./kg. capsule/d., 6 d./wk. for 2 wks. then off drug 3 wks., cycle repeated for total of 121 d.	P.O	0	100%	121 d.
Nelson, A. A., and Radomski, J. L., 1954.	10 dogs[1797]	Mongrel		250 mg./kg. capsule/d., 6 d./wk. for 98 d.	P.O	0	5 died	98 d.
Hewes, C. G., and Shay, D. E., 1955.	Guinea pigs[1798].		M & F	0.4 mg. daily plus regular diet for 9 wks.[1799, 1800]	P.O	0		9 wks.
Maffii, G., and Mainardi, L., 1955.	15 rats for each chemical at each dose.			50 mg./kg. body wt. daily for 31 d.[1800]	P.O	0		31 d.
Radomski, J. L., et al., 1955	4 dogs			250 mg./kg. capsule daily for (4) 2 wk. periods separated by 3 wk. period of no drug administration.	P.O	0		17 wks.
Reutner, T. F., et al., 1955	6 dogs			250 mg./kg. capsule daily, 6 d./wk	P.O	0	All sacrificed at 8 wks.	8 wks.
Reutner, T. F., et al., 1955	2 dogs			250 mg./kg. capsule daily, 6 d./wk	P.O	0	Killed at 5 wks	5 wks.

[1794] 2 dermal carcinomas at 83 and 89 wks.
[1782] Sem-weekly administration of 0.2 ml., 0.5% croton seed fraction acetone begun 1 wk. later.
[1795] 8 with 14 papillomas at 60 wks.
[1796] 3/40 croton seed fraction controls with 5 papillomas and 1 dermal carcinoma.
[1797] Age: 2–5 yrs.
[1798] Weanling.
[1799] Crystalline.
[1800] Chlortetracycline 1,3-hydrochloride.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
496. CHRYSENE 								
Steiner, 1955	Mice	C57BL	M & F	5 mg. in tricaprylin	S.C., interscapular region.	5 sarcomas (23%).	22 at 150 d	22–28 mos.
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE 								
Petrov, N. N., et al., 1952	Monkeys	Rhesus	F	15 mg. inj	Marrow of tibia	0		More than 6 yrs.
Graffi, A., and Hoffman, F., 1953.	110 mice	Albino (80 Bluhm, 30 No pure strain).	M & F	3 drops every 5 d. of 0.01% in acetone for 20 times, total 100 gamma/animal.	Skin	Tumors[1801]	68 at 28th wk	At least 28 wks.
Graffi, A., et al., 1953	Mice	Albino		400 gamma×2 & 400 gamma×3 in glycerine serum.[1802]	I.P	Tumors[1803]	19 at 6th mo	6 mos.
Graffi, A., and Hoffman, F., 1953.	150 mice	Albino (100 Bluhm, 50 No pure strain).	M & F	3 drops every 5 d. of 0.01% in acetone for 20 times, total 100 gamma/animal.	Skin	Tumors[1804]	58 at 28th wk	At least 28 wks.
Graffi, A., et al., 1953	Mice	Albino		Total of 600 gamma in glycerine-serum given in divided doses.[1802]	P.O. by tube	Tumors[1805]	16 at 6 mos	6 mos.
Graffi, A., et al., 1953	Mice	Albino		400 gamma in glycerine serum once.[1802]	I.P	Tumors[1806]	29 at 6 mos	6 mos.
Graffi, A., et al., 1953	Mice	Albino		400 gamma×2, 400 gamma×3 in glycerine serum.[1802]	I.V	Tumors[1807]	16 at 6 mos	At least 6 mos.
Graffi, A., et al., 1953	Mice	Albino		400 gm. once in glycerin-serum.[1802]	I.V	Tumors[1808]	66 at 6 mos	6 mos.
Borum, K., 1954	55 mice[1809]	St/Eh	M & F	0.05 ml. of a 0.5% soln. in benzene, once.[1810]	Skin	0	Killed at intervals	3 mos.

[1801] 65% with dermal tumors.
[1802] Croton oil 5% in mineral oil applied until death.
[1803] 12 with dermal tumors (1 carcinoma).
[1804] 90% with dermal tumors.
[1805] 9 dermal tumors, 0.6 tumors/animal.
[1806] 23 dermal tumors, 0.79 tumors/animal.
[1807] 36 dermal tumors (2 carcinomas), 2.25 tumors/animal.
[1808] 62 tumors on treated area (2 carcinomas), 0.94 tumors/animal.
[1809] Hair cycle in growth phase when treated.
[1810] Dyed with preparation of paratolylenediamine.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
Borum, K., 1954	45 mice[1811]	St/Eh	M & F	0.05 ml. of a 0.5% soln. in benzene, once.[1812]	Skin	88.7% pap	Killed at intervals	3 mos.
Ghadially, F. N., and Green, H. N., 1954.	15 mice	WLL	M	0.2% in 2% paraffin in acetone twice wkly.[1813]	Skin, interscapular.	0	12 at 12 wks	12 wks.
Ghadially, F. N., and Green, H. N., 1954.	13 mice[1814]	WLL	M	2 drops of 1% in benzene once[1815]	Skin, interscapular.	Tumors[1818]	13 at 14 wks	14 wks.
Ghadially, F. N., and Green, H. N., 1954.	13 mice[1814]	WLL	M	2 drops of 1% in benzene once[1817]	Skin, interscapular.	Tumors[1818]	12 at 14 wks	14 wks.
Ghadially, F. N., and Green, H. N., 1954.	15 mice[1814]	WLL	M	2 drops of 1% in benzene once[1819]	Skin, interscapular.	Tumors[1820]	15 at 14 wks	14 wks.
Ghadially, F. N., and Green, H. N., 1954.	21 mice	WLL	M	1% in benzene—2 drops once[1821]	Skin, interscapular.	Tumors[1822]	19 at 16 wks	16 wks.
Ghadially, F. N., and Green, H. N., 1954.	21 mice	WLL	M	1% in benzene—2 drops once[1823]	Skin, interscapular.	Tumors[1824]	18 at 16 wks	16 wks.
Ghadially, F. N., and Green, H. N., 1954.	21 mice	WLL	M	1% in benzene—2 drops once[1825]	Skin, interscapular. scapular.	Tumors[1826]	12 at 16 wks	16 wks.
Ghadially, F. N., and Green, H. N., 1954.	15 mice	WLL	M	0.3% in benzene twice wkly.—2 drops.	Skin, interscapular.	Tumors[1827]	9 at 13 wks	13 wks.
Ghadially, F. N., and Green, H. N., 1954.	15 mice	WLL	M	0.3% in benzene—2 drops twice a wk.[1828]	Skin, interscapular.	Tumors[1829]	11 at 13 wks	13 wks.
Ghadially, F. N., and Green, H. N., 1954.	15 mice	WLL	M	0.3% in benzene—2 drops twice a wk.[1830]	Skin, interscapular.	Tumors[1565]	2 at 13 wks	13 wks.
Ghadially, F. N., and Green, H. N., 1954.	15 mice	WLL	M	0.2% in 2% paraffin in acetone[1831] twice wkly.	Skin, interscapular.	Tumors[1832]	7 at 12 wks	12 wks.
Graffi, A., et al., 1954	120 mice	Albino		3 drops 5 times a d. of 0.02% in acetone, total dose 50 gamma[1833].	Skin	Tumors[1834]		
Graffi, A., et al., 1954	170 mice	Albino		3 drops 5 times a d. of 0.02% in acetone, total dose 50 gamma[1835].	Skin	Tumors		

[1565] 1 papilloma.
[1811] Hair cycle in rest phase when treated.
[1812] Dyed by I.V. preparation of paratolylenediamine.
[1813] 5 daily applications/wk. of 2 gtt. cortisone (12.5 mg/ml) to treated area.
[1814] Age: 7 wks.
[1815] Semiweekly administration of 5% croton oil in acetone.
[1816] 10 with 32 tumors.
[1817] Semiweekly applications of 5% croton oil in acetone plus cortisone daily.
[1818] 8 with 14 papillomas.
[1819] Semiweekly applications of 5% croton oil in acetone plus cortisone 5 days/week.
[1820] Papillomas.
[1821] Semiweekly applications of 5% croton oil in acetone for 15 wks.
[1822] 8 with 17 papillomas.
[1823] Semiweekly applications of 5% croton oil in acetone for 15 wks. preceded by cortisone.
[1824] 9 with 9 papillomas.
[1825] Semiweekly applications of 5% croton oil in acetone for 15 wks., preceded by cortisone.
[1826] 7 with 15 papillomas.
[1827] 8 with 36 papillomas and 6 epidermoid tumors.
[1828] 5 daily applications/wk. cortisone to treated area.
[1829] 11 with 85 papillomas and 3 epidermoid tumors.
[1830] 5 daily applications/wks. of cortisone to treated area.
[1831] Cortisone to treated area.
[1832] 6 with 15 papillomas.
[1833] 0.1 cc. olive oil S.C. after 3 and 5 days followed by application of 5% croton oil in mineral oil once a week.
[1534] 8 tumors/animal. Dermal tumors (10% malignant).
[1835] 0.1 cc. Novanest-Depot after 3 and 5 days, followed by application of 5% croton oil in mineral oil once a week.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
Howell, J. S., et al., 1954	Mice 88	IF, IF x A, IF x C57.	F	0.5% soln. in olive oil every two wks.—avg. dose 0.25 ml.	Applied to ventral & dorsal surface of skin, 4 drops of soln./side.	Tumors[1837]	8½ mos. longest, all were still alive after 4 mos.	8½ mos.
Kriegel, H., 1954	10 hamsters	Syrian golden	M & F	0.5% soln. in acetone 3 drops of about 0.25 mg. once wkly. on middle back.	Skin	Tumors[1838]	8 at 171 d	At least 171 d.
Kriegel, H., 1954	13 hamsters	Syrian golden	M & F	0.5% in acetone 3 drops of about 0.25 mg. twice a wk. on middle of back.	Skin	Tumors[1839]	10 at 120 d	At least 120 d.
Marchant, J., et al., 1954	29 mice	IF	F	0.25 ml. of 0.5% soln. in olive oil at fortnightly intervals.	I.P	Tumors[1840]	22 at 196 d	At least 196 d.
Marchant, J., et al., 1954	30 mice	IF	F	4 drops of 0.5% soln. in olive oil on each side of ventral & dorsal surface at fortnightly intervals.	Skin	Tumors[1841]	8 at 238 d	At least 238 d.
Noble, R. L., and Walters, J. H., 1954.	Rats[1720]			5 mg. in sesame oil once	I.M	Tumors[1842]	3–4 mos	Up to 4 mos.
Noble, R. L., and Walters, J. H., 1954	21 rats				I.M	Tumors[1843]		Up to 5 mos.
Salley, J. J., 1954	12 hamsters	Syrian		As acetone soln	Cheek pouch	Tumors[1844]	10	At least 7 wks.
Salley, J. J., 1954	6 hamsters	Syrian	3 āā	0.5% soln. in acetone 3 times a wk. for 16 wks.	Cheek pouch	Tumors[1845]	5 at 16 wks	16 wks.
Salley, J. J., 1954	6 hamsters	Syrian	3 āā	0.5% soln. in benzene 3 times a wk. for 16 wks.	Cheek pouch	Tumors[1846]	4 at 16 wks	16 wks.
Scott, G. M., 1954	44 rats		M & F	0.5% in benzene, two drops once wkly. for 3½ to 5½ mos.[1847]	Skin	Tumors[1848]	4 alive at 20 mos	20 mos.
Scott, G. M., 1954	40 rats		M & F	0.5% in benzene, two drops once a wk. for 3½ to 5½ mos.	Skin	Tumors[1849]	2 at 20 mos	20 mos.
Scott, G. M., 1954	32 rats		M & F	0.5% in benzene, 2 drops once a wk. for 3 to 6 mos.[1847]	Skin	Tumors[1850]	16 at 16 mos	20 mos.
Scott, G. M., 1954	34 rats		M & F	0.5% in benzene, 2 drops once a wk. for 3 to 6 mos.	Skin	Tumors[1851]	14 at 16 mos	20 mos.

[1720] Hypophysectomized.
[1836] 7.5 tumors/animal. Skin tumors (10% malignant).
[1837] Ovarian tumor at 7 mos. in all strains. 53 (60%) with granulosa cell tumors. 65 with mammary adenocarcinoma.
[1838] 100% dermal carcinomas at 171st day. (1st at 120th day.)
[1839] 80% skin carcinomas at 120th day. (1st at 85th day).
[1840] Of 196 survivors, 9 with ovarian tumors. 100% of tumor bearers with mammary carcinoma.
[1841] Of 238 day survivors, 2 ovarian tumors. 100% of tumor bearers with mammary carcinoma.
[1842] 3 with sarcoma.
[1843] 15 with sarcoma; 6 mammary tumors (4 malignant).
[1844] 10 with metastatic squamous cell carcinoma.
[1845] 5 with metastatic squamous cell carcinoma.
[1846] 3 with metastatic squamous cell carcinoma.
[1847] Yeast supplemented diet.
[1848] 73% with dermal tumors.
[1849] 77% with dermal tumors.
[1850] 25% with dermal tumors.
[1851] 65% with dermal tumors.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
Scott, G. M., 1954	23 rats		M & F	0.5% in benzene, 2 drops once a wk. for 5 to 6 mos.[1862]	Skin	Tumors[1863]	1 at 14 mos	At least 14 mos.
Scott, G. M., 1954	22 rats		M & F	0.5% in benzene, 2 drops once a wk. for 5 to 6 mos.	Skin	Tumors[1854]	2 at 16 mos	At least 16 mos.
Scott, G. M., 1954	13 rats		M & F	0.5% in benzene, 2 drops once a wk. for 3 to 5 mos.[1856]	Skin	0		20 mos.
Scott, G. M., 1954	18 rats		M & F	0.5% in benzene, 2 drops once a wk	Skin	Tumors[1866]	6 at 20 mos	20 mos.
Setälä, K., et al., 1954	50 mice	White	M	0.3% dissolved in paraffin oil once	Skin	0	100% at 24 wks	24 wks.
Setälä, K., et al., 1954	50 mice	White	M	0.3% in paraffin oil once[1867]	Skin	Tumors[1858]		24 wks.
Zachariae and Asboe-Hansen, 1954.	44 mice	St/Eh	M & F	0.5% soln. once	Skin	31 pap		At least 7 wks.
Zachariae and Asboe-Hansen, 1954.	200 mice	St/Eh	M & F	0.5% soln. once	Skin	123 pap[1859]		At least 12 wks.
Asboe-Hansen, G., and Zachariae, L., 1955.	25 mice	St/Eh Albino	F	0.5% painted once on dorsal area.[1860]	Skin	Tumors[1861]	Killed from 5 wks	Over 6 wks.
Berenblum and Haran, 1955	30 mice	Swiss	M	1 dose of 0.3 ml. of 0.5% carcinogen in polyethylene glycol-400.	P.O., stomach tube.	14 pap. of forestomach.	26 at 10 wks	30 wks.
Berenblum and Haran, 1955	20 mice	Swiss	M	1 dose of 0.3 ml. of 0.5% carcinogen in liq. paraffin.[1862]	P.O., stomach tube.	Tumors[1863]	17 at 10 wks	30 wks.
Berenblum and Haran, 1955	22 mice[390]	Swiss	F	1 application of 1.5% DMBA in liq. paraffin.[1864]	Skin of back	11[1865]	Mortality during first 23 wks. negligible.	38 wks.
Berenblum and Haran, 1955	([390])			1 application of 1.5% DMBA in liq. paraffin.[1868]	Skin of back	2[1867]	Mortality during first 23 wks. negligible.	38 wks.
Berenblum and Haran, 1955	41 mice	Swiss	M	1 dose of 0.3 ml. of 0.5% carcinogen in polyethylene glycol-400.[1862]	P.O., stomach tube.	20 pap. of forestomach.	40 at 10 wks	30 wks.
Berenblum and Haran, 1955	25 mice	Swiss	M	3 wkly. administrations of 0.3 ml. of 0.5% carcinogen in polyethylene[1868] glycol-400.	P.O., stomach tube.	Tumors[1869]	19 at 10 wks	30 wks

[390] Age at beginning: 3½ months.
[1862] Synthetic Vitamin B supplemented diet.
[1863] 86.5% with dermal tumors.
[1854] 91% with dermal tumors.
[1866] Some with 0.5 mg./wk. of aneurin in diet; others offspring of aneurin fed animals.
[1856] 44.5% with dermal tumors.
[1867] Span 20 (sorbitan monolaurate) applied twice daily for 24 wks.
[1858] 21 with 34 dermal tumors at 24 wks.
[1859] Latent period: 21–35 days.
[1860] Physiological saline injections (1.0 mg. per tumor) at 5 wks.
[1861] 100% with dermal papillomas.
[1862] Milk only for 3 days before treatment.
[1863] 7 papillomas, 1 forestomach squamous carcinoma at 21–30 wks.
[1864] 40 semiweekly applications of 5% croton oil in paraffin begun 3 weks. after treatment.
[1865] 5 with 10 treated area papillomas. Treatment area (6) and otic (15) papillomas. 2 with otic papillomas.
[1866] 40 semiweekly applications of 5% croton oil in paraffin plus 3 wks. of no application preceded treatment.
[1867] Treatment area papillomas at 16.5 and 25 wks.
[1868] Food withheld 18 hrs. before treatment.
[1869] Forestomach tumors (13 papillomas, 5 carcinomas). Papillomas: 1 at 0–10 wks., 2 at 11–20 wks., 10 at 21–30 wks. Carcinomas: 1 at 11–20 wks., 4 at 21–30 wks.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
Berenblum and Haran, 1955	20 mice	Swiss	M	6 wkly. administrations of 0.3 ml. of 0.5% carcinogen in polyethylene[1868] glycol-400.	P.O., stomach tube.	Tumors[1870]	14 after 10 wks	30 wks.
Berenblum and Haran, 1955	25 mice	C3H	M	1 administration of 0.3 ml. of 0.5% carcinogen in polyethylene glycol-400.[1868]	P.O., stomach tube.	5 paps. of forestomach.[1871]	21 at 10 wks	30 wks.
Berenblum and Haran, 1955	20 mice	C3H	M	2 wkly. administrations of 0.3 ml. of 0.5% carcinogen in polyethylene[1868] glycol-400.	P.O., stomach tube.	Tumors[1872]	16 at 10 wks	30 wks.
Berenblum and Haran, 1955	20 mice	C3H	M	6 wkly. administrations of 0.3 ml. of 0.5% carcinogen in polyethylene[1868] glycol-400.	P.O., stomach tube.	Tumors[1873]	All alive at 30 wks.	30 wks.
Berenblum and Haran, 1955	50 mice	Swiss	M	0.3 ml. of 0.5% DMBA in PEG solvent, once.[418,1874]	P.O., stomach tube.	Tumors[1875]	31 at 10 wks	30 wks.
Berenblum and Haran, 1955	20 mice	Swiss	M	0.3 ml. of 9.5% DMBA in PEG solvent, once.[418,1876]	P.O., stomach tube.	Tumors[1877]	16 at 10 wks	30 wks.
Berenblum and Haran, 1955	30 mice	Swiss	M	1 administration of 0.3 ml. of 0.5% carcinogen in polyethylene glycol-400.[1868]	P. O., stomach tube	Tumors[1878]	26 at 10 wks	30 wks.
Berenblum and Haran, 1955	45 mice	C3H	M	0.3 ml. of 1% DMBA in polyethylene glycol-400 solvent, twice, at 1 wk. interval.[1868,1879]	P.O., stomach tube.	Tumors[1880]	31 at 10 wks	30 wks.
Berenblum and Haran, 1955	45 mice	C3H	M	0.3 ml. of 1% DMBA in polyethylene glycol-400 solvent, twice, at 1 wk. interval.[1868,1879]	P.O., stomach tube.	Tumors[1880]	31 at 10 wks	30 wks.
Berenblum and Haran, 1955	25 mice	C3H	M	0.3 ml. of 1% DMBA in PEG solvent, twice, at 1 wk. interval.[1868, 1881]	P.O., stomach tube.	Tumors[1882]	18 at 10 wks	30 wks.
Berenblum and Haran, 1955	41 mice	Swiss	M	0.3 ml. of 0.5% DMBA in PEG solvent, once.[1883,1884]	P.O., stomach tube.	29 paps. of forestomach.	40 at 10 wks	30 wks.
Bielka, 1955	66 mice	Albino		50 times 0.004% acetone soln. twice daily, total dose—100 μg.	Skin	Tumors[1885]	45% at 7½ mos	7½ mos.

[118] Milk diet for 3 days followed by only water for 18 hours prior to first treatment; 18 hours of only water prior to subsequent treatments.
[1868] Food withheld 18 hrs. before treatment.
[1870] Forestomach tumors (10 papillomas, 4 carcinomas). Papillomas: 1 at 0–10 wks., 1 at 11–20 wks., 8 at 21–30 wks. Carcinomas: 4 at 21–30 wks.
[1871] At 21–30 wks.
[1872] Forestomach tumors: 9 papillomas, 1 squamous cell carcinoma at 21–30 wks.
[1873] Forestomach tumors: 8 papillomas, 12 carcinomas. Papillomas: 1 at 11–20 wks., 7 at 21–30 wks. Carcinomas: 3 at 11–20 wks., 9 at 21–30 wks.
[1874] 30 weekly doses .3 ml. of 3% croton oil in PEG after treatment.
[1875] Forestomach tumors: 24 papillomas, 2 carcinomas.
[1876] 30 weekly doses 0.3 ml. of PEG after treatment.
[1877] Forestomach tumors: 13 papillomas, 1 carcinoma.
[1878] 14 forestomach papillomas at 21–30 wks.
[1879] 30 weekly doses 0.3 ml. of 1% croton oil in PEG after treatment.
[1880] Forestomach tumors: 17 papillomas, 7 carcinomas. Papillomas: 2 at 10 wks., 5 at 20 wks. 10 at 30 wks. Carcinomas: 2 at 10 wks., 2 at 20 wks. 3 at 30 wks.
[1881] 30 weekly doses of PEG after treatment.
[1882] 2 forestomach papillomas at 10 wks.
[1883] Followed by water only for 18 hours once weekly.
[1884] Milk only for 3 days, followed by water only for 18 hours prior to treatment.
[1885] 45% with 24 papillomas, 8 carcinomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
Bielka, 1955	66 mice	Albino		50 times 0.004% acetone soln. twice daily, total dose—100 μg.	Skin application.	Tumors[1886]		4 mos.
Graffi, A., et al., 1955	Mice			0.01% in acetone & 5% croton oil in paraffin oil.[1887]	Skin	Tumors[1888]	11 animals at 3 mos.	At least 8 mos.
Graffi, A., et al., 1955	Mice			0.01% in acetone & 5% croton oil in paraffin oil.[1887]	Skin	Tumors[1889]	5	
Graffi, A., et al., 1955	Mice			1% in paraffin oil & 5% croton oil in paraffin oil at 10, 12 & 14 d. from transplantation.[1887]	Skin	Tumors[1890]	7 at 10 mos	At least 10 mos.
Klein, M., 1955 (B)	Mice[1891]	DBA/2	M	0.05 ml. of a 1.5% soln. in acetone, once mthly. for 5 mos.	Skin, nape of neck.	16 (94.1%) (all with skin pap., 3 with skin carc.).[1892]	17 alive at time of first tumor.	Avg. of 157 d.
Klein, M., 1955 (B)	Mice[1891]	DBA/2	M	0.05 ml. of a 1.5% soln. in acetone, once mthly. for 3 mos.	Skin, near nape of neck.	34 (89.5%) (All with skin pap., 5 with skin carc.).[1893]	38 alive at time of first tumor.	Avg. of 152 d.
Klein, M., 1955 (B)	Mice[1891]	DBA/2	M	0.05 ml. of a 1.5% soln. in acetone, once.[1895]	Skin, near nape of neck.	2 (9.5%) (skin pap.).[1894]	21 alive at time of first tumor.	Avg. of 310 d.
Klein, M., 1955 (B)	20 mice[1891]	DBA/2	M	0.05 ml. of a 1.5% soln. in acetone, once.	Skin, near nape of neck.	0		Avg. of 237 d.
Klein, M., 1955 (B)	40 mice[1891]	DBA/2	M	0.05 ml. of a 1.5% soln. in acetone, once every 3 mos. for duration of the experiment.	Skin, near nape of neck.	14 (37.8%) (skin pap.).[1896]	37 alive at time of first tumor.	Avg. of 218 d.
Klein, M., 1955 (B)	40 mice[1891]	DBA/2	M	0.05 ml. of a 1.5% soln. in acetone, once every 2 mos. for duration of the experiment.	Skin, near nape of neck.	26 (66.7%) (skin pap.).[1897]	39 alive at time of first tumor.	Avg. of 200 d.
Klein, M., 1955 (B)	Mice[1891]	DBA/2	M	0.05 ml. of a 1.5% soln. in acetone, once mthly. for 7 mos.	Skin, near nape of neck.	30 (93.8%) (all with skin pap., 4 with skin carc.).[1898]	32 alive at time of first tumor.	Avg. of 155 d.

[1886] 20% papillomas.
[1887] Dorsal skin transplanted to destroy neural supply.
[1888] 0.5 dermal tumors (3 carcinomas)/animal.
[1889] 1.2 dermal tumors/animal.
[1890] 1 dermal tumor (2 carcinomas)/animal.
[1891] Age: 6–7 wks.
[1892] 8.1 tumors/tumor-bearer. Latent period 88 days (avg.).
[1893] 4.2 tumors/tumor-bearer. Latent period, 80 days avg.
[1894] 1.0 tumor/tumor bearer.
[1895] Monthly application of 0.05 ml. of 2.5% croton oil in olive oil begun 1 month after treatment, continued till end.
[1896] 1.6 tumors/tumor-bearer. Latent period, 218 plus days avg.
[1897] 2.8 tumors/tumor-bearer. Latent period, 162 days avg.
[1898] 9.3 tumors/tumor-bearer. Latent period, 72 days avg.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
Orr, 1955	42 mice	Albino		1 application of 0.5% in acetone—(amt. sufficient to cover an area of about 2 sq. cm.).[1899]	Skin, region of r. scapula.	22[1900] (Skin tumors).	All killed at 160 d.	160 d.
Ritchie, A. C., and Saffiotti, U., 1955.	49 mice	Swiss	F	1.5% soln. in mineral oil, applied once.	Skin	Tumors[1901]	28 at 48 wks	48 wks.
Rusch, H. P., et al., 1955	28 mice	Sutter albino	F	1/40 of ml. of 0.3% soln. in acetone once.[1902]	Skin	Tumors[1903, 1904].		33 wks.
Rusch, H. P., et al., 1955	33 mice	Sutter albino	F	1/40 of ml. of 0.3% soln. in acetone once.[1905]	Skin	Tumors[1906, 1907].		33 wks.
Rusch, H. P., et al., 1955	25 mice	Sutter albino	F	1/40 of ml. of 0.3% soln. in acetone once.[1908]	Skin	Tumors[1909, 1910].		33 wks.
Darchun and Hadler, 1956	20 mice[1032]	Swiss	F	1 μg. of DMBA/3.46 sq. cm. of skin once.	Skin, back	0	All alive at end of experiment.	16 wks.
Darchun and Hadler, 1956	20 mice[1032]	Swiss	F	1 μg. DMBA/3.46 sq. cm. of skin once.[1911]	Skin, back	12 (total of 28 pap.).	17 alive at 15 wks.	17 wks.
Darchun and Hadler, 1956	20 mice[1032]	Swiss	F	1 μg. DMBA/3.46 sq. cm. of skin once.[1912]	Skin, back	16 (total of 29 pap.).	19 alive at 13 wks.	17 wks.
Holsti, P., 1956	15 rabbits	Mixed	M & F	0.5% emulsion in 1 ml. olive oil in 9 ml. water 6 d./wk. for 10 mos.	P.O., stomach tube.	0[1913]		10 mos.
Klein, M., 1956	30 mice[110]	Swiss	M	0.2 ml. of 0.0002% soln. in acetone, once mthly. for 10 mos. (Total dosage, 4.00 μg.)	Skin, back (approx. 120 sq. mm.).	3 (12%) (skin pap.).[1914]	25 alive at appearance of first tumor.	9–9½ mos.
Klein, M., 1956	30 mice[110]	Swiss	M	0.2 ml. of 0.0007% soln. in acetone, once mothly. for 10 mos. (Total dosage, 14.00 μg.)	Skin, back (approx. 120 sq. mm.).	4 (20%) (skin pap.).[1914]	20 alive at appearance of first tumor.	9–9½ mos.
Klein, M., 1956	30 mice[110]	Swiss	M	0.2 ml. of 0.007% soln. in acetone, once mthly. for 10 mos. (Total dosage, 140.00 μg.)	Skin, back (approx. 120 sq. mm.).	13 (52%) (skin pap.).[1915]	25 alive at appearance of first tumor.	9–9½ mos.
Klein, M., 1956	30 mice[110]	Swiss	M	0.2 ml. of 0.007% soln. in acetone, once (14.00 μg.).	Skin, back (approx. 120 sq. mm.).	5 (23%) (skin pap.)[1916]	22 alive at appearance of first tumor.	9–9½ mos.

[110] Initial treatment: 6 weeks of age.
[1032] Age: 6–8 weeks.
[1899] Followed 24 days later by secondary treatment of twice semiweekly application 0.5% croton oil in acetone begun 24 days later.
[1900] First papilloma at 16 days after initial croton oil treatment. Some malignant tumors. All but 2 within treated area.
[1901] 5 with 5 papillomas.
[1902] 40 semiweekly applications 0.5% croton oil.
[1903] 70% with papillomas, (2.1/mouse); 2 carcinomas.
[1904] 28 0.5% croton oil controls developed 6 papillomas at 112 days.
[1905] 30 semiweekly applications 2% iodoacetic acid plus 15 of 3% followed treatment.
[1906] Approx. 50% with papillomas (0.85/mouse); 1 carcinoma.
[1907] Approx. 40% of 3% iodoacetic acid controls developed papillomas at 24 wks.; 1 carcinoma at 26 wks.
[1908] 30 semiweekly applications 10% phenol plus 10 of 20% followed treatment.
[1909] Approx. 80% with papillomas (1.5/mouse); 6 carcinomas.
[1910] Approx. 40% of 20% phenol controls developed papillomas at 24 wks.
[1911] 34 semiweekly applications 0.02 ml. of 0.5% croton oil fraction in acetone followed treatment.
[1912] 16 weekly applications 0.02 ml. of 0.5% croton oil fraction in acetone begun 1 wk. after treatment.
[1913] Not a carcinogenesis study.
[1914] 1.0 tumors/tumor-bearer.
[1915] 2.8 tumors/tumor-bearer. Latent period, 169 days avg.
[1916] 1.8 tumors/tumor-bearer.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
Klein, M., 1956	30 mice[110]	Swiss	M	0.2 ml. of 0.06% soln. in acetone, once (120 μg.).	Skin, back (approx. 120 sq. mm.).	20 (69%) (skin pap.).[1917]	29 alive at appearance of first tumor.	9–9½ mos.
Klein, M., 1956	30 mice[110]	Swiss	M	0.2 ml. of 0.00008% soln. in acetone, once (0.16 μg.).[1918]	Skin, back (approx. 120 sq. mm.).	4 (17%) (skin pap.).[1914]	23 alive at appearance of first tumor.	9–9½ mos.
Klein, M., 1956	30 mice[110]	Swiss	M	0.2 ml. of a 0.0002% soln. in acetone, once (0.40 μg.).[1918]	Skin, back (approx. 120 sq. mm.).	7 (30%) (skin pap.).[1916]	23 alive at appearance of first tumor.	9–9½ mos.
Klein, M., 1956	30 mice[110]	Swiss	M	0.2 ml. of 0.0005% soln. in acetone, once (1.00 μg.).[1918]	Skin, back (approx. 120 sq. mm.).	12 (52%) (skin pap.).[1919]	23 alive at appearance of first tumor.	9–9½ mos.
Klein, M., 1956	30 mice[110]	Swiss	M	0.2 ml. of 0.006% soln. in acetone, once (12.00 μg.).[1918]	Skin, back (approx. 120 sq. mm.).	14 (64%) [1920].	22 alive at appearance of first tumor.	9–9½ mos.
Klein, M., 1956	30 mice[110]	Swiss	M	0.2 ml. of 0.00006% soln. in acetone, once mthly. for 10 mos. (Total dosage, 1.20 μg.)	Skin, back (approx. 120 sq. mm.).	3 (13%) (skin pap.).[1914]	23 alive at appearance of first tumor.	9–9½ mos.
Klein, M., 1956	30 mice[110]	Swiss	M	0.2 ml. of 0.06% soln. in acetone, once (120.00 μg.).[1918]	Skin, back (approx. 120 sq. mm.).	19 (83%) (skin tumors)[1921].	23 alive at appearance of first tumor.	9–9½ mos.
McCarter, et al., 1956	30 mice	CFW	F	Exposure to 1.0% DMBA in paraffin oil for 1 hr.[1922]	Skin, back[1923]	21 (total of 70 pap.).	27 surviving treatment.	22 wks.
McCarter, et al., 1956	30 mice	CFW	F	Exposure to 0.50% DMBA in paraffin oil for 6 hrs.[1922]	Skin, back[1924]	20 (total of 94 pap.).	25 surviving treatment.	22 wks.
McCarter, et al., 1956	30 mice	CFW	F	Exposure to 0.50% DMBA in paraffin oil for 3 hrs.[1922]	Skin, back[1925]	17 (total of 67 pap.).	30 surviving treatment.	22 wks.
McCarter, et al., 1956	30 mice	CFW	F	Exposure to 0.50% DMBA in paraffin oil for 1 hr.[1922]	Skin, back[1923]	21 (total of 79 pap.).	28 surviving treatment.	22 wks.
McCarter, et al., 1956	30 mice	CFW	F	Exposure to 0.25% DMBA in paraffin oilfor 6 hrs.[1922]	Skin, back[1924]	19 (total of 71 pap.).	25 surviving treatment.	22 wks.
McCarter, et al., 1956	30 mice	CFW	F	Exposure to 0.25% DMBA in paraffin oil for 3 hrs.[1922]	Skin, back[1925]	13 (total of 35 pap.).	All surviving treatment.	22 wks.
McCarter, et al., 1956	30 mice	CFW	F	Exposure to 0.25% DMBA in paraffin oil for 1 hr.[1922]	Skin, back[1923]	15 (total of 32 pap.).	26 surviving treatment.	22 wks.

[110] Initial treatment: 6 weeks of age.
[1914] 1.0 tumors/tumor-bearer.
[1916] 1.8 tumors/tumor-bearer.
[1917] 3.1 tumors/tumor-bearer. Latent period, 62 days avg.
[1918] Weekly application of 2.5% croton oil in acetone begun 2 wks. after treatment, continued for duration.
[1919] 2.9 tumors/tumor-bearer. Latent period, 143 days avg.
[1920] 12 with papillomas, 1 with squamous cell carcinoma, 1 with S.C. fibrosarcoma. 5.6 tumors/tumor-bearer. Latent period, 99 days avg.
[1921] 16 with papillomas, 3 with squamous cell carcinoma. 10.2 tumors/tumor-bearer. Latent period 86 days avg.
[1922] 40 semiweekly applications of 2.5% croton oil in paraffin begun 2 wks. later.
[1923] Round (16 mm. diam.) area constantly exposed. Excess removed with diethyl ether after 1 hr.
[1924] Round (16 mm. diam.) area constantly exposed. Excess removed with diethyl ether after 6 hours.
[1925] Round (16 mm. diam.) area constantly exposed. Excess removed with diethyl ether after 3 hours.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
McCarter, et al., 1956	30 mice	CFW	F	Exposure to 1.0% DMBA in paraffin oil for 3 hrs.[1922]	Skin, back[1925]	22 (total of 123 pap.).	29 surviving treatment.	22 wks.
McCarter, et al., 1956	30 mice	CFW	F	Exposure to 1.0% DMBA in paraffin oil for 6 hrs.[1922]	Skin, back[1924]	28 (total of 142 pap.).	29 surviving treatment.	22 wks.
Moon, H. D., et al., 1956	15 rats[1926]	Long-Evans	F	2 mg. of DMBA dissolved in 0.25 ml. of tricaprylin.[1927]	I.M. inj	Tumors[1928]	12 alive at 60 d	183 d.
Moon, H. D., et al., 1956	15 rats[1929]	Long-Evans	F	2 mg. of DMBA dissolved in 0.25 ml. of tricaprylin.	I.M. inj	Tumors[1930]	100% survival	183 d.
Moon, H. D., et al., 1956	15 rats[1931]	Long-Evans	F	2 mg. of DMBA dissolved in 0.25 ml. of tricaprylin.[1932]	I.M. inj	Tumors[1933]	9 alive at 155 d	380 d.
Moon, H. D., et al., 1956	15 rats[1931]	Long-Evans	F	2 mg. of DMBA dissolved in 0.25 ml. of tricaprylin.[1934]	I.M. inj	Tumors[1935]	9 alive at 155 d	380 d.
Moon, H. D., et al., 1956	15 rats[1936]	Long-Evans	F	2 mg. DMBA dissolved in 0.25 ml. of tricaprylin.	I.M. inj	Tumors[1937]	14 alive at 155 d	380 d.
Moon, H. D., et al., 1956	15 rats[1926]	Long-Evans	F	2 mg. of DMBA dissolved in 0.25 ml. of tricaprylin.[1938]	I.M. inj	Tumors[1939]	All alive at 60 d	183 d.
Moon, H. D., et al., 1956	30 rats[1926]	Long-Evans	F	2 mg. DMBA dissolved in 0.25 ml. tricaprylin.[1940]	I.M. inj	Tumors[1941]	20 alive at 60 d	183 d.
Orr, J. W., 1956	22 mice	Outbred	F		Skin	Tumors[1942]		
Orr, J. W., 1956	27 mice	C57	F		Skin	Tumors[1943]		
Orr, J. W., 1956	4 mice	C3H	F		Skin	Tumors[1944]		
Orr, J. W., 1956	14 mice	A	F		Skin	Tumors[1945]		
Orr, J. W., 1956	10 mice	1 FxC57	F		Skin	Tumors[1946]		
Orr, J. W., 1956	35 mice	1 F	F		Skin	Tumors[1947]		
Orr, J. W., 1956	43 mice	1 F	F		Skin	Tumors[1948]		
Pogosvants, E. E., 1956[1949]	32 steppe Lemmings.			0.5–1.0 mg. in peach oil once	S.C or I.M	Tumors[1950]	23 at 3 mos	At least 3 mos.

[1922] 40 semiweekly applications of 2.5% croton oil in paraffin begun 2 wks. later.
[1924] Round (16 mm. diam.) area constantly exposed. Excess removed with diethyl ether after 6 hours.
[1925] Round (16 mm. diam.) area constantly exposed. Excess removed with diethyl ether after 3 hours.
[1926] Hypophysectomized at 26–28 days of age.
[1927] DMBA 1 month postoperatively.
[1928] 7 tumors (58%) injection site sarcomas at 85–160 days after DMBA.
[1929] Initial treatment. Age: 54–56 days.
[1930] 14 tumors (93%) injection site sarcomas at 55–155 days after DMBA.
[1931] Hypophysectomized at 5 to 7 mos. of age.
[1932] DMBA 21 days postoperatively, followed by 6 doses/wk. pituitary extract (5–7.5 mg., I.P.) for duration.
[1933] 8 injection site sarcomas at 165–240 days after DMBA.
[1934] DMBA 21 days postoperatively.
[1935] 5 injection site sarcomas at 182–379 days after DMBA.
[1936] Age: 5–7 mos.
[1937] 13 injection site sarcomas at 155–295 days after DMBA.
[1938] DMBA 1 mo. postoperatively, followed by 6 doses/wk. pituitary extract (100–500 μg., I.P.) for duration.
[1939] 11 (73%) injection site sarcomas at 60–90 days after DMBA.
[1940] DMBA 1 month postoperatively, followed by 6 doses/wk. of ACTH. (50–60 μg., I.P.) for duration.
[1941] 10 (50%) injection site sarcomas at 90–160 days after DMBA.
[1942] 4 mammary tumors, 4 ovarian granulosa cell tumors.
[1943] 3 ovarian granulosa cell tumors.
[1944] 2 mammary tumors, 3 ovarian cysts.
[1945] 1 mammary tumor, 1 ovarian cyst.
[1946] 5 mammary tumors, 7 ovarian granulosa cell tumors.
[1947] 28 mammary tumors, 14 ovarian granulosa cell tumors.
[1948] 33 mammary tumors, 26 ovarian granulosa cell tumors.
[1949] Data from abstract.
[1950] 12/23 with injection site sarcomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
Porta, G. Della, et al., 1956	14 hamsters	Syrian golden	7 āā	1% in liq. petrolatum once[1951]	Skin, interscapular.	Tumors[1952, 1953]	12 at 15 wks	At least 38 wks.
Porta, G. Della, et al., 1956	8 hamsters	Syrian golden	4 āā	1% in liq. petrolatum wkly	Skin, interscapular.	Tumors[1954]	5 at 15 wks	20 wks.
Porta, G. Della, et al., 1956	14 hamsters	Syrian golden	7 āā	1% in liq. petrolatum U.S.P. once	Skin, interscapular.	Tumors[1953, 1955]	10 at 15 wks	At least 41 wks.
Prokofieva, E. I., Vopr. onkol. Leningrad, 2(1): 29–38, 1956.	Rabbits				Inj. into tibia metaphysis.	Sarc.[5423]		
Rask-Nielsen, 1956	64 mice[1956]	DBA		0.02 mg. in 0.01 cc. of paraffin	Inj. into thymus	Tumors[1957]	43 at about 13½ mos.	Approx. 23½ mos.
Rask-Nielsen, 1956	55 mice[1956]	C3H		0.02 mg. in 0.01 cc. of paraffin	Inj. into thymus.	Tumors[1958]	34 at about 13½ mos.	Approx. 20½ mos.
Rask-Nielsen, 1956	68 mice[1956]	ST		0.02 mg. in 0.01 cc. of paraffin	1nj. into thymus.	Tumors[1959]	15 at about 10½ mos.	Approx. 23½ mos.
Rask-Nielsen, 1956	36 mice	DBA		0.02 mg. in 0.01 cc. of paraffin	Inj. into spleen	0		
Rask-Nielsen, 1956	29 mice	C3H		0.02 mg. in 0.01 cc. of paraffin	Inj. into spleen	0		
Rask-Nielsen, 1956	76 mice	ST		0.02 mg. in 0.01 cc. of paraffin	Inj. into spleen	Tumors[1960]		At least 20 mos.
Rask-Nielsen, 1956	34 mice	DBA		0.02 mg. in 0.01 cc. of paraffin	Inj. into inguinal lymph node.	Tumors[1960]		At least 8 mos.
Rask-Nielsen, 1956	32 mice	C3H		0.02 mg. in 0.01 cc. of paraffin	Inj. into inguinal lymph node.	0		
Rask-Nielsen, 1956	53 mice[1956]	C57BL		0.02 mg. in 0.01 cc. of paraffin	Inj. into thymus.	Tumors[1961]	33 at about 4½ mos.	Approx 11½ mos.
Rask-Nielsen, 1956	84 mice	ST		0.02 mg. in 0.01 cc. of paraffin	Inj. into inguinal lymph node.	2 (thymic tumors).		At least 5 mos.
Riska, E. B., 1956	50 mice	Albino	M	0.003% dissolved in anhydrous polyoxyethylene sorbitan monopalmitate[1962] and solubilized with a 25% aq. soln. thrice a wk. for 35 wks.	Skin	Tumors[1963]	33 at 25 wks	35 wks.

[1951] Semiweekly applications of croton oil in petrolatum.
[1952] 1 carcinoma, 5 with 9 melanotic tumors.
[1953] Croton oil controls negative.
[1954] 20 squamous cell papillomas, 10 carcinomas.
[1955] 2 papillomas, 3 carcinomas, 4 with 9 transplantable melanotic tumors.
[1956] Age: 5–7 wks.
[1957] 12 (19%) plasma-cell leukemias, (5 thymic tumors, 7 generalized leukemias). 12 with pulmonary adenomas.
[1958] 1 generalized plasma-cell leukemia at 18 mos., 1 pulmonary adenoma at 19 mos.
[1959] 9 (13%) stem-cell (thymic) leukemias; 2 with pulmonary adenomas.
[1960] 1 thymic tumor; 1 generalized leukemia.
[1961] 7 plasma-cell leukemias (6 thymic tumors, 1 generalized leukemia).
[1962] Tween 40.
[1963] 86 papillomas, 3 carcinomas in 24 (63%) tumor-bearers at 35 wks.
[5423] Osteogenic.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
Riska, E. B., 1956	50 mice	Albino	M	0.003% dissolved in anhydrous polyoxyethylene sorbitan monolaurate[1964] & solubilized with a 25% aq. soln. thrice a wk. for 35 wks.	Skin	Tumors[1965]	32 at 25 wks	35 wks.
Riska, E. B., 1956	50 mice	Albino	M	0.003% dissolved in anhydrous polyoxyethylene sorbitan monostearate[1966] & solubilized with a 50% aq. soln. thrice a wk. for 35 wks.	Skin	Tumors[1967]	47 at 25 wks	35 wks.
Riska, E. B., 1956	50 mice	Albino	M	0.003% dissolved in anhydrous polyoxyethylene sorbitan monooleate[1968] & solubilized with a 50% aq. soln. thrice a wk. for 35 wks.	Skin	Tumors[1969]	38 at 25 wks	35 wks.
Riska, E. B., 1956	30 mice	Albino	M	0.003% dissolved in anhydrous polyoxyethylene sorbitan monooleate[1970] & solubilized with a 50% aq. soln. thrice a wk. for 35 wks.	Skin	Tumors[1971]	25 at 25 wks	35 wks.
Riska, E. B., 1956	30 mice	Albino	M	0.003% dissolved in anhydrous polyoxyethylene sorbitan trioleate[1972] & solubilized with a 50% aq. soln. thrice a wk. for 35 wks.	Skin	Tumors[1973]	23 at 25 wks	35 wks.
Riska, E. B., 1956	30 mice	Albino	M	0.003% dissolved in anhydrous sorbitan trioleate[1974] & solubilized with a 50% aq. emulsion thrice a wk. for 35 wks.	Skin	Tumors[1976]	22 at 25 wks	35 wks.
Riska, E. B., 1956	50 mice	Albino	M	0.003% dissolved in anhydrous polyoxyethylene sorbitan monostearate[1966] & solubilized with a 25% aq. soln. thrice a wk. for 35 wks.	Skin	Tumors[1976]	44 at 25 wks	35 wks.
Riska, E. B., 1956	50 mice	Albino	M	0.003% dissolved in anhydrous polyoxyethylene sorbitan monooleate[1968] & solubilized with a 25% aq. soln. thrice a wk. for 35 wks.	Skin	Tumors[1977]	33 at 25 wks	35 wks.
Riska, E. B., 1956	30 mice	Albino	M	0.003% dissolved in anhydrous polyoxyethylene sorbitan monooleate[1970] & solubilized with a 25% aq. soln. thrice a wk. for 35 wks.	Skin	Tumors[1978]	24 at 25 wks	35 wks.

[1964] Tween 20.
[1965] 40 papillomas in 22 (44%) tumor-bearers at 35 wks.
[1966] Tween 60.
[1967] 39 papillomas in 18 (38%) tumor-bearers at 35 wks.
[1968] Tween 80.
[1969] 26 papillomas in 16 (36%) tumor-bearers at 35 wks.
[1970] Tween 81.
[1971] 2 papillomas in 2 (13%) tumor-bearers at 35 wks.
[1972] Tween 85.
[1973] 7 papillomas in 6 (25%) tumor-bearers at 35 wks.
[1974] Span 85.
[1976] 1 (4%) papilloma at 35 wks.
[1976] 45 papillomas in 19 (40%) tumor-bearers at 35 wks.
[1977] 22 papillomas in 13 (33%) tumor-bearers at 35 wks.
[1978] 14 papillomas in 9 (38%) tumor-bearers at 35 wks.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
Riska, E. B., 1956	30 mice	Albino	M	0.003% dissolved in anhydrous polyoxyethylene sorbitan trioleate[1972] & solubilized with a 25% aq. soln. thrice a wk. for 35 wks.	Skin	Tumors[1975]	21 at 25 wks	35 wks.
Riska, E. B., 1956	30 mice	Albino	M	0.003% dissolved in anhydrous sorbitan trioleate[1974] & solubilized with a 25% aq. emulsion thrice a wk. for 35 wks.	Skin	Tumors[1975]	23 at 25 wks	35 wks.
Riska, E. B., 1956	30 mice	Albino	M	0.003% dissolved in 25% aq. soln. polyethylene glycol 400 thrice a wk. for 35 wks.	Skin	0	27 at 25 wks	35 wks.
Riska, E. B., 1956	30 mice	Albino	M	0.003% dissolved in 25% aqueous soln. polyethylene glycol 600 thrice a wk. for 35 wks.	Skin	0	25 at 25 wks	35 wks.
Riska, E. B., 1956	30 mice	Albino	M	0.003% dissolved in 25% aqueous soln. polyethylene glycol 1500 thrice a wk. for 35 wks.	Skin	0	18 at 25 wks	35 wks.
Riska, E. B., 1956	50 mice	Albino	M	0.003% dissolved in anhydrous polyoxyethylene sorbitan monolaurate[1964] & solubilized with a 12.5% aq. soln. thrice a wk. for 35 wks.	Skin	Tumors[1979]	44 at 25 wks	35 wks.
Riska, E. B., 1956	50 mice	Albino	M	0.003% dissolved in anhydrous polyoxyethylene sorbitan monopalmitate[1962] & solubilized with a 12.5% aq. soln. thrice a wk. for 35 wks.	Skin	Tumors[1980]	47 at 25 wks	35 wks.
Riska, E. B., 1956	50 mice	Albino	M	0.003% dissolved in anhydrous polyoxyethylene sorbitan monostearate[1966] & solubilized with a 12.5% aq. soln. thrice a wk. for 35 wks.	Skin	Tumors[1981]	32 at 25 wks	35 wks.
Riska, E. B., 1956	50 mice	Albino	M	0.003% dissolved in anhydrous polyoxyethylene sorbitan monooleate[1968] & solubilized with a 12.5% aq. soln. thrice a wk. for 35 wks.	Skin	Tumors[1982]	24 at 25 wks	35 wks.
Riska, E. B., 1956	30 mice	Albino	M	0.003% dissolved in anhydrous polyoxyethylene sorbitan monocleate[1970] & solubilized with a 12.5% aq. soln. thrice a wk. for 35 wks.	Skin	Tumors[1983]	26 at 25 wks	35 wks.

[1962] Tween 40.
[1964] Tween 20.
[1966] Tween 60.
[1968] Tween 80.
[1970] Tween 81.
[1972] Tween 85.
[1974] Span 85.

[1975] 1 (4%) papilloma at 35 wks.
[1979] 94 papillomas, 2 squamous cell carcinomas in 33 (71%) tumor-bearers at 35 wks.
[1980] 16 papillomas in 2 (26%) tumor-bearers at 35 wks.
[1981] 30 papillomas in 21 (61%) tumor-bearers at 35 wks.
[1982] 8 papillomas in 7 (27%) tumor-bearers at 35 wks.
[1983] 16 papillomas in 13 (50%) tumor-bearers at 35 wks.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
Riska, E. B., 1956	30 mice	Albino	M	0.0005% dissolved in 6.25% aq. soln. polyethylene glycol 1500 thrice a wk. for 35 wks.	Skin	0	25 at 25 wks	35 wks.
Riska, E. B., 1956	30 mice	Albino	M	0.0005% dissolved in liq. paraffin thrice a wk. for 35 wks.	Skin	0	16 at 25 wks	35 wks.
Riska, E. B., 1956	30 mice	Albino	M	0.0005% dissolved in 6.25% aq. soln. sodium dodecylsulfate thrice a wk. for 35 wks.	Skin	0	25 at 25 wks	35 wks.
Riska, E. B., 1956	30 mice	Albino	M	0.0005% dissolved in 6.25% aq. soln. zephirol thrice a wk. for 35 wks.	Skin	0	27 at 25 wks	35 wks.
Riska, E. B., 1956	50 mice	Albino	M	0.0001% dissolved in anhydrous polyoxyethylene sorbitan monolaurate[1964] & solubilized with a 25% aq. soln. thrice a wk. for 35 wks.	Skin	0	41 at 25 wks	35 wks.
Riska, E. B., 1956	50 mice	Albino	M	0.0001% dissolved in anhydrous polyoxyethylene sorbitan monostearate[1966] & solubilized with a 6.25% aq. soln. thrice a wk. for 35 wks.	Skin	0	37 at 25 wks	35 wks.
Riska, E. B., 1956	30 mice	Albino	M	0.0005% dissolved in 6.25% aq. soln. polyethylene glycol 600 thrice a wk. for 35 wks.	Skin	0	28 at 25 wks	35 wks.
Riska, E. B., 1956	50 mice	Albino	M	0.003% dissolved in anhydrous polyoxyethylene sorbitan monolaurate[1964] & solubilized with a 100% aq. soln. thrice a wk. for 35 wks.	Skin	Tumors[1984]	46 at 25 wks	35 wks.
Riska, E. B., 1956	50 mice	Albino	M	0.003% dissolved in anhydrous polyoxyethylene sorbitan monopalmitate[1962] & solubilized with a 100% aq. soln. thrice a wk. for 35 wks.	Skin	Tumors[1986]	39 at 25 wks	35 wks.
Riska, E. B., 1956	50 mice	Albino	M	0.003% dissolved in anhydrous polyoxyethylene sorbitan monostearate[1966] & solubilized with a 100% aq. soln. thrice a wk. for 35 wks.	Skin	Tumors[1986]	39 at 25 wks	35 wks.
Riska, E. B., 1956	50 mice	Albino	M	0.003% dissolved in anhydrous polyoxyethylene sorbitan monooleate[1968] & solubilized with a 100% aq. soln. thrice a wk. for 35 wks.	Skin	Tumors[1987]	42 at 25 wks	35 wks.

[1962] Tween 40.
[1964] Tween 20.
[1966] Tween 60.
[1968] Tween 80.

[1984] 11 papillomas, 2 squamous cell carcinomas, in 11 (23%) tumor-bearers at 35 wks.
[1986] 59 papillomas, 1 squamous cell carcinoma in 25 (53%) tumor-bearers at 35 wks.
[1986] 70 (60%) papillomas at 35 wks.
[1987] 45 papillomas in 24 (52%) tumor-bearers at 35 wks.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
Riska, E. B., 1956	50 mice	Albino	M	0.003% dissolved in anhydrous polyoxyethylene sorbitan monooleate[1970] & solubilized with a 100% aq. soln. thrice a wk. for 35 wks.	Skin	Tumors[1988]	46 at 25 wks	35 wks.
Riska, E. B., 1956	50 mice	Albino	M	0.003% dissolved in anhydrous polyoxyethylene sorbitan trioleate[1972] & solubilized in 100% aq. soln. thrice a wk. for 35 wks.	Skin	Tumors[1989]	40 at 25 wks	35 wks.
Riska, E. B., 1956	50 mice	Albino	M	0.003% dissolved in anhydrous sorbitan trioleate[1974] & solubilized in 100% aq. emulsion thrice a wk. for 35 wks.	Skin	Tumors[1990]	46 at 25 wks	35 wks.
Riska, E. B., 1956	50 mice	Albino	M	0.003% dissolved in liq. paraffin thrice a wk. for 35 wks.	Skin	Tumors[1991]	42 at 25 wks	35 wks.
Riska, E. B., 1956	50 mice	Albino	M	0.003% dissolved in anhydrous polyoxyethylene sorbitan monolaurate[1964] & solubilized in 50% aq. soln. thrice a wk. for 35 wks.	Skin	Tumors[1992]	31 at 25 wks	35 wks.
Riska, E. B., 1956	50 mice	Albino	M	0.003% dissolved in anhydrous polyoxyethylene sorbitan monopalmitate[1962] & solubilized with a 50% aq. soln. thrice a wk. for 35 wks.	Skin	Tumors[1993]	36 at 25 wks	35 wks.
Riska, E. B., 1956	30 mice	Albino	M	0.003% dissolved in anhydrous polyoxyethylene sorbitan monooleate[1972] & solubilized with a 6.25% aq. soln. thrice a wk. for 35 wks.	Skin	Tumors[1994]	26 at 25 wks	35 wks.
Riska, E. B., 1956	30 mice	Albino	M	0.003% dissolved in anhydrous sorbitan trioleate[1974] & solubilized with a 6.25% aq. emulsion thrice a wk. for 35 wks.	Skin	0	21 at 25 wks	35 wks.
Riska, E. B., 1956	30 mice	Albino	M	0.003% dissolved in 6.25% aq. soln. polyethylene glycol 400 thrice a wk. for 35 wks.	Skin	0	26 at 25 wks	35 wks.
Riska, E. B., 1956	30 mice	Albino	M	0.003% dissolved in 6.25% aq. soln. polyethylene glycol 600 thrice a wk. for 35 wks.	Skin	0	28 at 25 wks	36 wks.
Riska, E. B., 1956	50 mice	Albino	M	0.003% dissolved in 6.25% aq. soln. polyethylene glycol 1500 thrice a wk. for 35 wks.	Skin	0	28 at 25 wks	35 wks.

[1962] Tween 40.
[1964] Tween 20.
[1970] Tween 81.
[1972] Tween 85.
[1974] Span 85.
[1988] 14 papillomas, 1 squamous cell carcinoma in 7 (15%) tumor-bearers at 35 wks.
[1989] 25 papillomas, 1 squamous cell carcinoma in 17 (39%) tumor-bearers at 35 wks.
[1990] 19 papillomas, 1 squamous cell carcinoma in 14 (30%) tumor-bearers at 35 wks.
[1991] 8 papillomas in 7 (17%) tumor-bearers at 35 wks.
[1992] 11 papillomas in 7 (28%) tumor-bearers at 35 wks.
[1993] 18 papillomas in 14 (30%) tumor-bearers at 35 wks.
[1994] 5 papillomas in 4 (15%) tumor-bearers at 35 wks.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
Riska, E. B., 1956	50 mice	Albino	M	0.003% dissolved in 6.25% aq. soln. sodium dodecylsulfate thrice a wk. for 35 wks.	Skin	Tumors[1995]	42 at 25 wks	35 wks.
Riska, E. B., 1956	50 mice	Albino	M	0.003% dissolved in 6.25% aq. soln. zephirol thrice a wk. for 35 wks.	Skin	Tumors[1996]	43 at 25 wks	35 wks.
Riska, E. B., 1956	50 mice	Albino	M	0.003% dissolved in anhydrous polyoxyethylene sorbitan monolaurate[1964] & solubilized with a 6.25% aq. soln. thrice a wk. for 35 wks.	Skin	Tumors[1997]	33 at 25 wks	35 wks.
Riska, E. B., 1956	50 mice	Albino	M	0.003% dissolved in anhydrous polyoxyethylene sorbitan monopalmitate[1962] & solubilized with a 6.25% aq. soln. thrice a wk. for 35 wks.	Skin	Tumors[1998]	30 at 25 wks	35 wks.
Riska, E. B., 1956	50 mice	Albino	M	0.003% dissolved in anhydrous polyoxyethylene sorbitan monostearate[1966] & solubilized with a 6.25% aq. soln. thrice a wk. for 35 wks.	Skin	Tumors[1999]	40 at 25 wks	35 wks.
Riska, E. B., 1956	50 mice	Albino	M	0.003% dissolved in anhydrous polyoxyethylene sorbitan monooleate[1968] & solubilized with a 6.25% aq. soln. thrice a wk. for 35 wks.	Skin	Tumors[2000]	41 at 25 wks	35 wks.
Riska, E. B., 1956	30 mice	Albino	M	0.003% dissolved in anhydrous polyoxyethylene sorbitan monooleate[1970] & solubilized with a 6.25% aq. soln. thrice a wk. for 35 wks.	Skin	Tumors[2001]	25 at 25 wks	35 wks.
Riska, E. B., 1956	30 mice	Albino	M	0.003% dissolved in 6.25% aq. soln. sodium taurocholate thrice a wk. for 35 wks.	Skin	Tumors[2002]	26 at 25 wks	35 wks.
Riska, E. B., 1956	50 mice	Albino	M	0.001% dissolved in anhydrous polyoxyethylene sorbitan monolaurate[1964] & solubilized with a 25% aq. soln. thrice a wk. for 35 wks.	Skin	Tumors[2003]	36 at 25 wks	35 wks.
Riska, E. B., 1956	50 mice	Albino	M	0.001% dissolved in anhydrous polyoxyethylene sorbitan monostearate[1966] & solubilized with a 25% aq. soln. thrice a wk. for 35 wks.	Skin	Tumors[2004]	34 at 25 wks	35 wks.

[1962] Tween 40.
[1964] Tween 20.
[1966] Tween 60.
[1968] Tween 80.
[1995] 16 papillomas, 1 squamous cell carcinoma in 13 (28%) tumor-bearers at 35 wks.
[1996] 8 papillomas in 6 (12%) tumor-bearers at 35 wks.
[1997] 57 papillomas, 1 squamous cell carcinoma in 27 (55%) tumor-bearers at 35 wks.
[1998] 35 papillomas, 1 squamous cell carcinoma in 22 (44%) tumor-bearers at 35 wks.
[1999] 58 papillomas in 27 (55%) tumor-bearers at 35 wks.
[2000] 27 papillomas in 19 (43%) tumor-bearers at 35 wks.
[2001] 46 papillomas in 17 (65%) tumor-bearers at 35 wks.
[2002] 55 papillomas in 21 (78%) tumor-bearers at 35 wks.
[2003] 3 papillomas in 3 (9%) tumor-bearers at 35 wks.
[2004] 15 papillomas, 13 (33%) tumor-bearers at 35 wks.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
Riska, E. B., 1956	50 mice	Albino	M	0.0005% dissolved in anhydrous polyoxyethylene sorbitan monolaurate[1964] & solubilized with a 25% aq. soln. thrice a wk. for 35 wks.	Skin	0	39 at 25 wks	35 wks.
Riska, E. B., 1956	50 mice	Albino	M	0.0005% dissolved in anhydrous polyoxyethylene sorbitan monostearate[1966] & solubilized with a 25% aq. soln. thrice a wk. for 35 wks.	Skin	Tumors[2006]	41 at 25 wks	35 wks.
Riska, E. B., 1956	30 mice	Albino	M	0.0005% dissolved in 25% aq. soln. polyethylene glycol 400 thrice a wk. for 35 wks.	Skin	0	28 at 25 wks	35 wks.
Riska, E. B., 1956	30 mice	Albino	M	0.0005% dissolved in 25% aq. soln. polyethylene glycol 600 thrice a wk. for 35 wks.	Skin	0	20 at 25 wks	35 wks.
Riska, E. B., 1956	30 mice	Albino	M	0.0005% dissolved in 25% aq. soln. polyethylene glycol 1500 thrice a wk. for 35 wks.	Skin	0	22 at 25 wks	35 wks.
Riska, E. B., 1956	30 mice	Albino	M	0.0005% dissolved in anhydrous polyoxyethylene sorbitan monostearate[1966] & solubilized in a 6.25% aq. soln. thrice a wk. for 35 wks.	Skin	Tumors[1975]	25 at 25 wks	35 wks.
Riska, E. B., 1956	30 mice	Albino	M	0.0005% dissolved in anhydrous polyoxyethylene sorbitan monooleate[1968] & solubilized with a 6.25% aq. soln. thrice a wk. for 35 wks.	Skin	0	26 at 25 wks	35 wks.
Riska, E. B., 1956	30 mice	Albino	M	0.0005% dissolved in 6.25% aq. soln. polyethylene glycol 400 thrice a wk. for 35 wks.	Skin	0	24 at 25 wks	35 wks.
Riska, E. B., 1956	30 mice	Albino	M	0.003% dissolved in anhydrous sorbitan trioleate[1974] & solubilized with a 12.5% aq. emulsion thrice a wk. for 35 wks.	Skin	Tumors[2006]	16 at 25 wks	35 wks.
Riska, E. B., 1956	30 mice	Albino	M	0.003% dissolved in anhydrous polyoxyethylene sorbitan trioleate[1972] & solubilized with a 12.5% aq. soln. thrice a wk. for 35 wks.	Skin	0	18 at 25 wks	35 wks.
Roe, 1956	20 mice	Albino "S" strain.	M	Single application of 0.2 ml. of 0.15% DMBA in acetone.[2007]	Skin, back	Tumors[2008]	14 at 36 wks., avg. survival time 56.3 wks.	Approx. 56.2 wks.

[1964] Tween 20.
[1966] Tween 60.
[1968] Tween 80.
[1972] Tween 85.
[1974] Span 85.
[1976] 1 (4%) papilloma at 35 wks.
[2005] 1 (3%) papilloma at 35 wks.
[2006] 1 (6%) papilloma at 35 wks.
[2007] 18 weekly applications of 0.3 ml. 0.5% croton oil in acetone.
[2008] 11 with 7.1±2.6 papillomas at 22 wks. 10 with 2.0±0.8 papillomas at death. 4 with 7 malignant tumors at 46.3±2.5 wks.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
Roe, 1956	10 mice	Albino "S"	M	Single application of 0.3 ml. of 0.15% DMBA in acetone.	Skin, back	Tumors[2009]	8 at 36 wks., avg. survival time 68.7 wks.	Approx. 68.7 wks.
Roe, 1956	20 mice	Albino "S" strain.	M	Single application of 0.2 ml. of 0.15% DMBA in acetone.	Skin, back	Tumors[2010]	17 at 36 wks., avg. survival time 57.6 wks.	Approx. 57.6 wks.
Roe 1956	30 mice	Albino "S" strain.	M	Single application of 0.2 ml. of 0.15% DMBA in acetone.	Skin, back	Tumors[2011]	22 at 36 wks., avg. survival time 67.1 wks.	Approx. 67.1 wks.
Roe, 1956	10 mice	Albino "S" strain.	M	Single application of 0.2 ml. of 0.15% of DMBA in acetone.[2007]	Skin, back	Tumors[2012]	7 at 36 wks., avg. survival time 59.6 wks.	Approx. 59.6 wks.
Saffiotti and Shubik, 1956	25 mice[2013]	Swiss	F	1 application of DMBA in mineral oil.[2014]	Skin, interscapular region.	14[2015,2016]	23 at time of first tumor.	25 wks.
Saffiotti and Shubik, 1956	50 mice[2013]	Swiss	F	1 application of 1% DMBA in mineral oil.	Skin, interscapular region.	0	40 alive at 52 wks	62 wks.
Saffiotti and Shubik, 1956	20 mice[2013]	Swiss	F	Twice wkly. applications of 0.01% DMBA in mineral oil.	Skin, interscapular region.	10[2017,2018]	18 at time of first tumor.	62 wks.
Saffiotti and Shubik, 1956	30 mice[2013]	Swiss	F	1 application of 1% DMBA in mineral oil, followed after 1 wk. by twice wkly. applications of 0.01% DMBA in mineral oil.	Skin, interscapular region.	17[2019,2020]	27 at time of first tumor.	62 wks.
Salaman, M. H., and Roe, J. C., 1956.	20 mice	S	10 āā	0.2 ml. of 0.075% soln. in acetone twice, 1 hr. apart.[2021]	Skin	6[2022,2023]	15 at 28 wks	At least 74.5 wks.
Salaman, M. H., and Roe, J. C., 1956.	20 mice	S	10 āā	0.2 ml. of 0.075% soln. in acetone twice, 1 d. apart.[2021]	Skin	7[2024,2023]	18 at 28 wks	At least 77 wks.
Salaman, M. H., and Roe, J. C., 1956.	20 mice	S	10 āā	0.2 ml. of 0.15% soln. in acetone twice, 4 d. apart.[2021]	Skin	6[2023,2025]	18 at 28 wks	At least 70.3 wks.
Salaman, M. H., and Roe, J. C., 1956.	20 mice	S	10 āā	0.2 ml. of 0.15% soln. in acetone twice, 3 wks. apart.[2021]	Skin	10[2023,2026]	20 at 28 wks	At least 73.6 wks.
Salaman, M. H., and Roe, J. C., 1956.	20 mice	S	10 āā	0.2 ml. of 0.15% soln. in acetone twice, 10 wks. apart.[2021]	Skin	9[2023,2026]	18 at 28 wks	At least 71.3 wks.

[2007] 18 weekly applications of 0.3 ml. 0.5% croton oil in acetone.
[2009] 5 with 2.0±1.2 papillomas. 2 with probable malignant tumors.
[2010] 12 with 5.0±1.8 papillomas. 4 with malignant dermal tumors at 55.3±4.7 wks. 1 with a probable malignant tumor.
[2011] 12 with 1.7±.6 papillomas. 2 with malignant dermal tumors at 55.3±4.7 wks. 1 with a probable malignant tumor.
[2012] 6 with 5.6±2.9 papillomas at 22 weeks. 5 with 2.9±1.7 papillomas at death. 3 with 6 malignant tumors at 46.3±2.5 wks. 1 with one malignant tumor at 53 weeks.
[2013] Age at start: 2–3 months.
[2014] Semi weekly applications of 5% croton oil in mineral oil begun 1 week after treatment.
[2015] 138 papillomas, 2 carcinomas.
[2016] Latent period 12 weeks avg.
[2017] 14 papillomas, 13 carcinomas.
[2018] Latent period 50 weeks avg.
[2019] 23 papillomas, 24 carcinomas.
[2020] Latent period 43 weeks avg.
[2021] 15 weekly applications 0.3 ml. of 0.5% croton oil begun 3 months later.
[2022] 5 dermal carcinomas, 2 dermal sarcomas, 3 probable malignant tumors.
[2023] Papilloma incidence not recorded.
[2024] 6 dermal carcinomas, 1 dermal sarcoma, 2 probable malignant tumors.
[2025] 4 dermal carcinomas, 3 dermal sarcomas, 2 probable malignant tumors.
[2026] 10 dermal carcinomas, 1 dermal sarcoma, 5 probable malignant tumors.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
Salaman, M. H., and Roe, J. C., 1956.	20 mice	S	10 āā	0.2 ml. of 0.15% soln. in acetone once.[2021]	Skin	5[2023,2027]	18 at 28 wks	At least 83.5 wks.
Salaman, M. H., and Roe, J. C., 1956.	20 mice	Albino "S" strain.	M	0.2 ml. 0.15% DMBA in acetone, followed 26 d. later by 13 wkly. applications of 0.3 ml. 0.03% DMBA in acetone.[2028]	Skin, back	Tumors[2029, 2030].	All alive at time of first tumor, avg. survival time 151 d.	163 d.
Salaman & Roe, 1956	19 mice	Albino "S" strain.	M	0.2 ml. 0.15% DMBA in acetone, followed 26 d. later by 13 wkly. applications of 0.3 ml. 0.03% DMBA in acetone.	Skin, back	Tumors[2031, 2032].	18 at appearance of 1st tumor, avg. survival time 152. d.	163 d.
Schnitzer, A., 1956	51 mice			50 mg. three times a wk. for 7 wks	Skin	21 carcinomas.		4 mos.
Schnitzer, A., 1956	43 mice			50 μg. three times a wk. for 7 wks., 1/10 mg. Histamine inj. S.C. 3 times a wk.	Skin	18 carcinomas.		4 mos.
Schnitzer, A., 1956	44 mice			50 μg. three times a wk. for 7 wks., 0.03 mg. Corisone inj. S.C. 3 times a wk.	Skin	32		4 mos.
Setala, H., 1956	50 mice	White	M	0.015–0.026 mg. as 0.03% soln. in "Tween 81" polyoxyethylene sorbitan monooleate thrice wkly. every other d.	Skin	Tumors[2033]	100% at 9 wks	38 wks.
Setala, H., 1956	50 mice	White	M	0.015–0.026 mg. as 0.03% soln. in "Tween 85" polyoxyethylene sorbitan trioleate thrice wkly. every other d.	Skin	Tumors[2034]	100% at 11 wks	41 wks.
Setala, H., 1956	50 mice	White	M	0.015–0.026 mg. as 0.03% soln. in "Span 85" sorbitan trioleate thrice wkly. every other d.	Skin	Tumors[2035]	45 at 15 wks	41 wks.
Setala, H., 1956	50 mice	White	M	0.015–0.026 mg. as 0.03% soln. in polyoxyethylene sorbital tetraoleate thrice wkly. every other d.	Skin	Tumors[2036]	48 at 15 wks	42 wks.
Setala, H., 1956	50 mice	White	M	0.015–0.026 mg. as 0.03% soln. in "Span 80" sorbitan monooleate thrice wkly. every other d.	Skin	Tumors[2037]	45 at 13 wks	36 wks.
Setala, H., 1956	50 mice	White	M	0.24 mg. as 0.3% soln. in "Span 20" sorbitan monolaurate thrice wkly. every other d.	Skin	Tumors[2038]	50 at 4 wks	30 wks.

[2021] 15 weekly applications 0.3 ml. of 0.5% croton oil begun 3 months later.
[2023] Papilloma incidence not recorded.
[2027] 5 dermal carcinomas, 1 dermal sarcoma, 3 probable malignant tumors.
[2028] 21 weekly applications of 0.3 ml. 0.5% croton oil in acetone begun on 22nd day, alternated each 3–4 days with DMBA.
[2029] 18 with 38 malignant dermal tumors; 8 with probable malignant tumors. 2 with regional lymph node metastases.
[2030] Latent period, 134 days avg.
[2031] 10 with 26 malignant dermal tumors; 6 probable malignant tumors.
[2032] Latent period, 130.3 days avg.
[2033] 42 with 233 unspecified tumors, 1st at 9 wks.
[2034] 48 with 307 unspecified tumors, first at 11 wks.
[2035] 41 with 130 unspecified tumors, first at 5 wks.
[2036] 40 with 25 squamous cell carcinomas, 88 benign dermal tumors, first at 15 wks.
[2037] 30 with 168 unspecified dermal tumors, first at 13 wks.
[2038] 46 with 12 squamous cell carcinomas, 228 benign dermal tumors, first at 4 wks.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
Setala, H., 1956	50 mice	White	M	0.15–0.26 mg. as 0.3% soln. in "Tween 40" polyoxyethylene sorbitan monopalmitate thrice wkly. every other d.	Skin	0		7 wks.
Setala, H., 1956	50 mice	White	M	0.26 mg. as 0.3% soln. in "Tween 60" polyoxyethylene sorbitan monostearate thrice wkly., every other d.	Skin	Tumors[2039]	15 at 7 wks	10 wks.
Setala, H., 1956	50 mice	White	M	0.15–0.26 mg. as 0.3% soln. in "Tween 80" polyoxyethlene sorbitan monooleate thrice wkly. every other d.	Skin	Tumors[2040]	4 at 7 wks	10 wks.
Setala, H., 1956	50 mice	White	M	0.15–0.26 mg. as 0.3% soln. in "Span 80" sorbitan monooleate thrice wkly. every other d.	Skin	Tumors[2041]	5 at 8 wks.	10 wks.
Setala, H., 1956	50 mice	White	M	0.15–0.26 mg. as 0.3% soln. in "Tween 81" polyoxyethylene sorbitan monooleate thrice wkly. every other d.	Skin	Tumors[2042]	15 at 10 wks	17 wks.
Setala, H., 1956	50 mice	White	M	0.15 mg. as 0.3% soln. in liq. paraffin thrice wkly. every other d.	Skin	Tumors[2043]	30 at 26 wks	26 wks.
Setala, H., 1956	50 mice	White	M	0.22 mg. as 0.3% soln. in "Tween 20" polyoxyethylene sorbitan monolaurate thrice wkly. every other d.	Skin	Tumors[2044]	10 at 8 wks	10 wks.
Setala, H., 1956	50 mice	White	M	0.0015–0.0026 mg. as 0.003% soln. "Tween 81" polyoxyethylene sorbitan monooleate thrice wkly. every other d.	Skin	Tumors[2045]	46 at 26 wks	52 wks.
Setala, H., 1956	50 mice	White	M	0.0015–0.0026 mg. as 0.003% soln. in "Tween 85" polyoxyethylene sorbitan trioleate thrice wkly. every other d.	Skin	Tumors[2046]	44 at 18 wks	52 wks.
Setala, H., 1956	50 mice	White	M	0.0015–0.0026 mg. as 0.003% soln. in "Span 85" sorbitan trioleate thrice wkly. every other d.	Skin	Tumors[2047]	46 at 24 wks	52 wks.
Setala, H., 1956	50 mice	White	M	0.0015–0.0026 mg. as 0.003% soln. in polyoxyethylene sorbitol tetraoleate thrice wkly. every other d.	Skin	Tumors[2048]	40 at 26 wks	52 wks.

[2039] 3 with 7 benign dermal tumors, first at 7 wks.
[2040] 4 with 20 benign dermal tumors, first at 7 wks.
[2041] 1 benign dermal tumor at 8 wks.
[2042] 6 with 10 benign dermal tumors, first at 10 wks.
[2043] 46 with 16 squamous cell carcinomas, 184 benign dermal tumors, first at 5 wks.
[2044] 4 with 5 benign dermal tumors, first at 8 wks.
[2045] 13 with 24 squamous cell carcinomas and benign dermal tumors, first at 26 wks.
[2046] 28 with 64 squamous cell carcinomas and benign dermal tumors, first at 18 wks.
[2047] 27 with 57 squamous cell carcinomas and benign dermal tumors, first at 24 wks.
[2048] 5 with 5 squamous cell carcinomas and benign dermal tumors, first at 26 wks.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
Setala, H., 1956	50 mice	White	M	0.15 mg. as 0.3% soln. in liq. paraffin once.[2049]	Skin, back	Tumors[2050, 2051]	46 at 17 wks	52 wks.
Setala, H., 1956	50 mice	White	M	0.15 mg. as 0.3% soln. in liq. paraffin once.[2052]	Skin	Tumors[2053, 2054]	48 at 16 wks	52 wks.
Setala, H., 1956	50 mice	White	M	0.15 mg. as 0.3% soln. in liq. paraffin once.[2055]	Skin	Tumors[2055, 2057]	27 at 33 wks	52 wks.
Setala, H., 1956	50 mice	White	M	0.15 mg. as 0.3% soln. in liq. paraffin once.[2058]	Skin	Tumors[2059, 2050]	33 at 52 wks	52 wks.
Setala, H., 1956	50 mice	White	M	0.15–0.26 mg. as 0.3% soln. in "Tween 85" polyoxyethylene sorbitan trioleate thrice wkly. every other d.	Skin	Tumors[2051]	13 at 10 wks	15 wks.
Setala, H., 1956	50 mice	White	M	0.15–0.26 mg. as 0.3% soln. in "Span 85" sorbitan trioleate thrice wkly., every other d.	Skin	Tumors[2052]	13 at 11 wks	17 wks.
Setala, H., 1956	50 mice	White	M	0.15–0.26 mg. as 0.3% soln. in "G-2854" polyoxyethylene sorbital tetraoleate thrice wkly, every other d.	Skin	Tumors[2053]	11 at 11 wks	15 wks.
Setala, H., 1956	50 mie	White	M	0.015 mg. as 0.03% soln. in liq. paraffin thrice wkly., every other d.	Skin	Tumors[2064]	43 at 13 wks	34 wks.
Setala, H., 1956	50 mice	White	M	0.22 mg. as 0.03% soln. in "Tween 20" polyoxyethylene sorbitan monolaurate thrice wkly. every other d.	Skin	Tumors[2055]	37 at 15 wks	36 wks.
Setala, H., 1956	50 mice	White	M	0.024 mg. as 0.03% soln. in "Span 20" sorbitan monolaurate thrice wkly. every other d.	Skin	Tumors[2055]	45 at 10 wks	30 wks.
Setala, H., 1956	50 mice	White	M	0.015–0.026 mg. as 0.03% soln. in "Tween 40" polyoxyethylene sorbitan monopalmitate thrice wkly., every other d.	Skin	Tumors[2087]	100% at 8 wks	29 wks.
Setala, H., 1956	50 mice	White	M	0.0015 mg. as 0.003% soln. in liq. paraffin thrice wkly. every other d.	Skin	Tumors[2068]	42 at 25 wks	52 wks.

[2049] 6 days/wk. applications of Tween 20 begun 24 hrs. later, continued until end.
[2050] 5 with 5 benign dermal tumors.
[2051] 1 of 50 Tween 20 controls developed a benign dermal tumor.
[2052] 6 days/wk. applications of Span 20 begun 24 hrs. later, continued until end.
[2053] Of 19, 1 malignant, 9 non-malignant, dermal tumor.
[2054] 1 of 50 Span 20 controls developed a dermal tumor.
[2055] 6 days/wk. applications of Tween 81 begun 24 hrs. later, continued until end.
[2056] 2 with 3 benign dermal tumors.
[2057] 50 Tween 81 controls negative.
[2058] 6 days/wk. applications of Span 80 begun 24 hrs. later, continued until end.
[2059] 4 with 1 malignant, 4 non-malignant dermal tumor.
[2060] 1 of 50 Span 80 controls developed a dermal tumor.
[2061] 4 with 7 benign dermal tumors, first at 10 wks.
[2062] 8 with 17 benign dermal tumors, first at 11 wks.
[2063] 6 with 6 benign dermal tumors, first at 11 wks.
[2064] 39 with 215 squamous cell carcinomas and benign skin tumors, first at 13 wks.
[2065] 27 with 50 unspecified dermal tumors, first at 15 wks.
[2066] 31 with 155 unspecified dermal tumors, first at 10 wks.
[2067] 42 with 180 unspecified dermal tumors, first at 8 wks.
[2068] 13 with 18 squamous cell carcinoma and benign dermal tumors, first at 25 wks.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
Setala, H., 1956	50 mice	White	M	0.0022 mg. as 0.003% soln. in "Tween 20" polyoxyethylene sorbitan monolaurate thrice wkly., every other d.	Skin	Tumors[2069]	47 at 23 wks	52 wks.
Setala, H., 1956	50 mice	White	M	0.0024 mg. as 0.003% soln. in "Span 20" sorbitan monolaurate thrice wkly., every other d.	Skin	Tumors[2070]	40 at 14 wks	52 wks.
Setala, H., 1956	50 mice	White	M	0.0015–0.0026 mg. as 0.003% soln. in "Tween 40" polyoxyethylene sorbitan monopalmitate thrice wkly., every other d.	Skin	Tumors[2071]	47 at 12 wks	52 wks.
Setala, H., 1956	50 mice	White	M	0.0026 mg. as 0.003% soln. in "Tween 60" polyoxyethylene sorbitan monostearate thrice wkly., every other d.	Skin	Tumors[2072]	50 at 11 wks	52 wks.
Setala, H., 1956	50 mice	White	M	0.0015–0.0026 mg. as 0.003% soln. in "Tween 80" polyoxyethylene sorbitan monooleate thrice wkly., every other d.	Skin	Tumors[2073]	46 at 12 wks	52 wks.
Setala, H., 1956	50 mice	White	M	0.0015–0.0026 mg. as 0.003% soln. in "Span 80" sorbitan monooleate thrice wkly., every other d.	Skin	Tumors[2074]	36 at 26 wks	52 wks.
Setala, H., 1956	50 mice	White	M	0.3% soln. in liq. paraffin once	Skin	0	8 at 52 wks	52 wks.
Setala, H., 1956	50 mice	White	M	0.15 mg. as 0.3% soln. in liq. paraffin once.[2075]	Skin	0	32 at 52 wks	52 wks.
Setala, H., 1956	50 mice	White	M	0.15 mg. as 0.3% soln. in liq. paraffin once.[2076]	Skin, back	0	2 at 52 wks	52 wks.
Setala, H., 1956	50 mice	White	M	0.15 mg. as 0.3% soln. in liq. paraffin once.[2077]	Skin	Tumors[2078, 2079]	50 at 10 wks	52 wks.
Setala, H., 1956	50 mice	White	M	0.15 mg. as 0.3% soln. in liq. paraffin once.[2080]	Skin	Tumors[2081, 2082]	20 at 52 wks	52 wks.
Setala, H., 1956	50 mice	White	M	0.15 mg. as 0.3% soln. in liq. paraffin once.[2083]	Skin	Tumors[2084, 2085]	28 at 52 wks	52 wks.
Setala, H., 1956	50 mice	White	M	0.026 mg. as 0.03% soln. in "Tween 60" polyocyethylene sorbitan monostearate thrice wkly., every other d.	Skin	Tumors[2086]	100% at 9 wks	29 wks.

[2069] 22 with 34 squamous cell carcinomas and benign dermal tumors, first at 23 wks.
[2070] 35 with 7 squamous cell carcinomas and 148 benign dermal tumors, first at 14 wks.
[2071] 28 with 70 squamous cell carcinomas and benign dermal tumors, first at 12 wks.
[2072] 31 with 85 squamous cell carcinoma and benign dermal tumors, first at 11 wks.
[2073] 35 with 80 squamous cell carcinomas and benign dermal tumors, first at 12 wks.
[2074] 16 with 25 benign dermal tumors, first at 26 wks.
[2075] 6 days/wk. applications of paraffin begun 24 hrs. later, continued until end.
[2076] 6 days/wk. applications of carbowax 1500 begun 24 hrs. later, continued until end.
[2077] 6 days/wk. applications of Tween 40 begun 24 hrs. later, continued until end.
[2078] 29 with 56 benign dermal tumors.
[2079] 2 of 50 Tween 40 controls developed benign dermal tumors.
[2080] 6 days/wk. applications of Tween 60 begun 24 hrs. later, continued until end.
[2081] 37 with 2 malignant, 103 non-malignant dermal tumors.
[2082] 5 of 50 Tween 60 controls developed 6 benign dermal tumors.
[2083] 6 days/wk. applications of Tween 80 begun 24 hrs. later, continued until end.
[2084] 19 with 35 benign dermal tumors.
[2085] 1 of 50 Tween 80 controls developed a benign dermal tumor.
[2086] 28 with 1 squamous cell carcinoma and 111 benign dermal tumors, first at 9 wks.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
Setala, H., 1956	50 mice	White	M	0.015–0.026 mg. as 0.03% soln. in "Tween 80" polyoxyethylene sorbitan monooleate thrice wkly., every other d.	Skin	Tumors[2087]	100% at 9 wks	36 wks.
Setala, H., 1956	50 mice	White	M	0.15 mg. as 0.3% soln. in liq. paraffin once.[2088]	Skin	Tumors[2089-2090]	16 at 52 wks	52 wks.
Setala, H., 1956	50 mice	White	M	0.15 mg. as 0.3% soln. in liq. paraffin once.[2091]	Skin	0[2092]	All died by 45 wks.	45 wks.
Setala, H., 1956	50 mice	White	M	0.15 mg. as 0.3% soln. in liq. paraffin once.[2093]	Skin	Tumors[2094, 2095]	10 at 52 wks	52 wks.
Setala, H., 1956	50 mice	White	M	0.15 mg. as 0.3% soln. in liq. paraffin once.[2096]	Skin	Tumors[2097, 2098]	29 at 52 wks	52 wks.
Berenblum, I., and Haran-Ghera, N., 1957.	Mice	Swiss	F	0.3 ml. of 1.0% soln. in polyethylene glycol-400 once.[2099]	P.O., stomach tube.	Tumors[2100]	26 at end of experiment.	At least 32 wks.
Borum, K., 1957	2 mice[2101]	ST/Eh albino	M	0.05 ml. of 0.5% soln. in benzene once.[2102]	Skin, interscapular.	Tumors[2103]		3 mos.
Borum, K., 1957	88 mice[2104]	ST/Eh albino	36 M, 52 F	0.05 ml. of 0.5% soln. in benzene once.[2105]	Skin, interscapular.	Tumors[2106]		3 mos.
Borum, K., 1957	101 mice[2107]	ST/Eh albino	50 M, 51 F	0.05 ml. of 0.5% soln. in benzene once.[2108]	Skin, interscapular.	Tumors[2109]		3 mos.
Borum, K., 1957	83 mice[2110]	ST/Eh albino	43 M, 40 F	0.05 ml. of 0.5% soln. in benzene once.[2111]	Skin, interscapular.	Tumors[2112]		3 mos.
Borum, K., 1957	14 mice[2113]	ST/Eh albino	9 M, 5 F	0.05 ml. of 0.5% soln. in benzene once.[2114]	Skin, interscapular.	Tumors[2115]		3 mos.
Borum, K., 1957	31 mice[2116]	ST/Eh albino	15 M, 16 F	0.05 ml. of 0.5% soln. in benzene once.[2117]	Skin, interscapular.	Tumors[2118]		3 mos.

[2087] 40 with 320 unspecified dermal tumors, first at 9 wks.
[2088] 6 days/wk. applications of Tween 85 begun 24 hrs. later, continued until end.
[2089] 21 with 1 malignant, 42 non-malignant, dermal tumors.
[2090] 1 of 5 Tween 85 controls developed a benign dermal tumor.
[2091] 6 days/wk. applications of Span 85 begun 24 hrs. later, continued until end.
[2092] 1 of 50 Span 85 controls developed a benign dermal tumor.
[2093] 6 days/wk. applications of G-2854 begun 24 hrs. later, continued until end.
[2094] 2 with 2 benign dermal tumors.
[2095] 50, G-2854 controls negative.
[2098] Twice daily, 6 days/wk. applications of Span 20 begun 24 hrs. later, continued until end.
[2097] 21 with 33 benign dermal tumors.
[2098] 1 of 50 Span 20 controls developed a benign dermal tumor.
[2099] 64 semiweekly applications of 5% croton oil in paraffin.
[2100] 24 with papillomas (8+/mouse). 2 of 21 croton oil controls with papillomas, avg. 0.09/mouse.
[2101] Age: 482 days; hair dyed black.
[2102] Applied between 7th and 8th hair growth cycles.
[2103] 1 papilloma at 38 days.
[2104] Age 137 and 166 days: hair dyed black.
[2105] Applied between 3rd and 4th hair growth cycle.
[2106] 23 males with 48, 44 females with 97 papillomas; latency: males 50.3, females 52.8 days.
[2107] Age 52 and 54 days; hair dyed black.
[2108] Applied between 2nd and 3rd hair growth cycles.
[2109] 30 males with 72, 35 females with 75 papillomas; latency: males 54.1, females 50.4 days.
[2110] Age 22 and 23 days; hair dyed black.
[2111] Applied between 1st and 2nd hair growth cycles.
[2112] 19 males with 35+, 18 females with 30 papillomas; latency: males 45.5, females 44.7 days.
[2113] Age 439 and 463 days; hair dyed black.
[2114] Applied between 6th and 7th hair growth cycles.
[2115] 6 males with 8, 2 females with 2 papillomas; latency: males 49.1, females 43 days.
[2116] Age 328 and 403 days; hair dyed black.
[2117] Applied between 5th and 6th hair growth cycles.
[2118] 11 males with 15, 13 females with 21 papillomas; latency: males 45.8, females 43.9 days.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
Borum, K., 1957	69 mice[2119]	ST/Eh albino	40 M, 29 F	0.05 ml. of 0.5% soln. in benzene once.[2120]	Skin, interscapular.	Tumors[2121]		3 mos.
Boutwell, R. K., et al., 1957	33 mice	Sutter	F	75 μg in benzene once	Skin	Tumors[2122]		24 wks.
Boutwell, R. K., et al., 1957	33 mice	Sutter	F	75 μg. in benzene once[2123]	Skin	Tumors[2124, 2125]		24 wks.
Graffi, A., and Reissig, G. 1957.	Mice[2126]	Li		3 drops 0.02% DMBA in acetone 10 times.	Skin	Tumors[2127]	At 4th wk. 51 old, 174 young.	50 wks.
Graffi, A., and Reissig, G., 1957.	70 mice[2128]	Agnes-Bluhm	M	100 μg. of 0.004% acetone soln. daily for 50 d.	Skin	Tumors[2129]	52 at 4 wks	45 wks.
Graffi, A., and Reissig, G., 1957.	110 mice[2128]	Albino	M	100 μg. of 0.004% acetone soln. daily for 50 d.	Skin	Tumors[2130]	79 at 4 wks	45 wks.
Graffi, A., and Reissig, G., 1957.	150 mice[2128]	Albino	M	100 mg. of 0.02% acetone soln. daily for 10 d.	Skin	Tumors[2131]	110 at 4 wks	45 wks.
Graffi, A., and Reissig, G., 1957.	28 mice[2128]	Agnes-Bluhm	M	100 μg. of 0.004% acetone soln. daily for 50 d., followed 2 wks. later by 100 μg. of 0.02% acetone soln. daily for 10 d.	Skin	Tumors[2132]		45 wks.
Graffi, A., and Reissig, G., 1957.	Mice[2133]	Li		One dose of 3 drops 0.2% DMBA in acetone followed by croton oil 5% in mineral oil.	Skin	Tumors[2134]	At 4th wk.—46 old, 42 young.	At least 80 wks.
Graffi, A., and Reissig, G., 1957.	Mice[2135]	Li		10 doses of 3 drops of 0.02% DMBA in acetone followed by croton oil 5% in mineral oil during life span.	Skin	Tumors[2136]	At 4th wk.—51 old, 49 young.	At least 80 wks.
Graffi, A., and Reissig, G. 1957.	Mice[2137]	Agnes-Bluhm		25 doses of 3 drops of 0.004% DMBA in acetone.	Skin	Tumors[2138]	At 4th wk.—33 old, 21 young.	At least 50 wks.
Graffi, A., and Reissig, G., 1957.	Mice[2139]	Agnes-Bluhm		25 doses of 3 drops of 0.004% DMBA in acetone followed by croton oil 5% in mineral oil.	Skin	Tumors[2140]	At 4th wk.—31 old, 22 young.	At least 50 wks.
Graffi, A., and Reissig, G., 1957.	20 mice[2128]	Albino	M	100 μg. of 0.004% acetone soln. daily for 50 d., followed 2 wks. later by 100 μg. of 0.02% acetone soln. daily for 10 d.	Skin	Tumors[2141]		45 wks.

[2119] Age 292 and 297 days; hair dyed black.
[2120] Applied between 4th and 5th hair growth cycles.
[2121] 25 males with 41, 22 females with 22 papillomas; latency: males 51.4, females 54.2 days.
[2122] 2 with papillomas.
[2123] 46 semi-weekly applications of 500 μg. croton oil begun 1 week later.
[2124] 75% with papillomas at 12 weeks.
[2125] Croton oil controls developed tumors.
[2126] Age: 56 at 12 months; 250 at 3 months.
[2127] 11 with 14 tumors in older group; 28 with 44 tumors (8 carcinomas) in younger group.
[2128] Age 3–4 months; 18–20 gms.
[2129] 22 papillomas, 22 carcinomas.
[2130] 13 papillomas, 12 carcinomas.
[2131] 15 papillomas, 5 carcinomas.
[2132] 7 papillomas.
[2133] Age: 50 at 12 months; 100 at 3 months.
[2134] 19 with 89 tumors (2 carcinomas) in older group; 16 with 88 tumors (3 carcinomas) in younger group.
[2135] Age: 58 at 12 months; 100 at 3 months.
[2136] 38 with 223 tumors (3 carcinomas) in older group; 26 with 138 tumors (8 carcinomas) in younger group.
[2137] Age: 36 at 12 months; 21 at 3 months.
[2138] 7 with 8 tumors (1 carcinoma) in older group; 4 with 5 tumors in younger group.
[2139] Age: 33 at 12 months; 25 at 3 months.
[2140] 5 with 11 tumors in older group; 14 with 73 tumors (3 carcinomas) in younger group.
[2141] 3 papillomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
Graffi, A., and Reissig, G., 1957.	89 mice, newborn.	White		0.5% DMBA in acetone 2 drops once, after 4 wks. 5% c.o. in mineral oil once wkly. for life span.	Skin	Tumors[2142]	At 4th wk.—78	70 wks.
Graffi, A., and Reissig, G., 1957.	130 mice 3–4 mos. old.	White	M	0.5% DMBA in acetone 2 drops once, after 4 wks. 5% c.o. in mineral oil once wkly.		Tumors[2143]	53 at 4th wks	70 wks.
Graffi, A., and Reissig, G., 1957.	62 mice 3–4 mos. old.	White	F	0.5% DMBA in acetone 2 drops once, after 4 wks. 5% c.o. in mineral oil once wkly. for life span.	Skin	Tumors[2144]	At 4th wk.—52	70 wks.
Graffi, A., and Reissig, G., 1957.	175 mice 4–10 d. old.	White		0.5% DMBA in acetone 2 drops once, after 4 wks. 5% c.o. in mineral oil once wkly, for life span.	Skin	Tumors[2145]	At 4th wk.—137	70 wks.
Horton, W. A., et al., 1957	20 mice	C3H		100 mg. of 0.6% soln. in white mineral oil once, repeated at 28 wks.	Skin	Tumors[2146]		At least 28 wks.
Maltoni, C., and Prodi, G., 1957.	6 hamsters	Cricetus Auratus.		0.2% in acetone, paintings once wkly.	Skin	6[2147]		75 d.
Maltoni, C., and Prodi, G., 1957.	4 rabbits	Albino		0.3% in acetone, painted twice wkly. for 15 or 30 d.	Skin	0[2148]		Up to 90 d.
Marchant, J., 1957	22 mice[2149]	Outbred albino	F	0.2 ml. of 0.5% soln. in olive oil at fortnightly intervals in 16 drops at 4 different sites.	Skin, ventral & dorsal surface	Tumors[2150]	6.6 mos. mean survival.	6.6 mos. mean.
Marchant, J., 1957	27 mice[2149]	C57BL	F	0.2 ml. of 0.5% soln. in olive oil at fortnightly intervals in 16 drops at 4 different sites.	Skin, ventral & dorsal surface.	Tumors[2151]	9.3 mos. mean survival.	9.3 mos. mean.
Marchant, J., 1957	13 mice[2152]	Outbred albino.	F	0.2 ml. of 0.5% soln. in olive oil once.	Skin	Tumors[2153]	6 died	Still in progress.
Marchant, J., 1957	15 mice[2152]	lF	F	0.2 ml. of 0.5% soln. in olive oil at fortnightly intervals in 16 drops at 4 different sites.	Skin	Tumors[2154]	9 from 4.5–7 mos	7 mos.
Marchant, J., 1957	Mice	CIF	F	0.2 ml. of 0.5% soln. in olive oil at fortnightly intervals in 16 drops at 4 different sites.	Skin, ventral & dorsal surface.	Tumors[2155]	7 at 4 mos	7.3 mos. mean.
Marchant, J., 1957	6 mice[2149]	CIF	F	0.2 ml. of 0.5% soln. in olive oil 6 times at fortnightly intervals.	Skin	Tumors[2156]	6 mos. mean survival.	6 mos. mean.

[2142] 19 with 47 tumors (1 carcinoma).
[2143] 26 with 109 tumors (2 carcinomas).
[2144] 30 with 78 tumors (2 carcinomas).
[2145] 48 with 170 tumors.
[2145] 1 papilloma at 26 weeks; 100% of survivors developed tumors (50% progressed to malignancy).
[2147] 100% with papillomas at 53–65 days.
[2148] Histological study of skin biopsies.
[2149] At 4 months.
[2150] 4 with ovarian granulosa cell tumors, 4 with mammary tumors.
[2151] 3 with ovarian granulosa cell tumors.
[2152] Breeding.
[2153] 6 with mammary tumors. Avg. 2.1 litters/breeder.
[2154] 2 with ovarian granulosa cell tumors and mammary tumors. Breeding ceased at age 5 months.
[2155] 2 with ovarian granulosa cell tumors, 3 with mammary tumors.
[2156] 1 mammary tumor.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
Marchant, J., 1957	6 mice[2149]	CIF	F	0.2 ml. of 0.5% soln. in olive oil five times at fortnightly intervals.	Skin	Tumors[2157]	10 mos. mean survival.	10 mos. mean.
Marchant, J., 1957	2 mice[2149]	CIF	F	0.2 ml. of 0.5% soln. in olive oil 4 times at fortnightly intervals.	Skin	Tumors[2158]	2 at 4.3 mos.. mean survival.	4.3 mos. mean.
Marchant, J., 1957	3 mice[2149]	CIF	F	0.2 ml. of 0.5% soln. in olive oil thrice at fortnightly intervals.	Skin	0	4 mos. mean survival.	4 mos. mean.
Marchant, J., 1957	5 mice[2149]	CIF	F	0.2 ml. of 0.5% soln. in olive oil twice at fortnightly intervals.	Skin	Tumors[2159]	15.1 mos. mean survival.	15.1 mos. mean.
Marchant, J., 1957	4 mice[2149]	C3H	F	0.2 ml. of 0.5% soln. in olive oil at fortnightly intervals in 16 drops at 4 different sites.	Skin, ventral & dorsal surface.	Tumors[2150]	7.4 mos. mean survival.	7.4 mos. mean.
Marchant, J., 1957	14 mice[2149]	A	F	0.2 ml. of 0.5% soln. in olive oil at fortnightly intervals in 16 drops at 4 different sites.	Skin, ventral & dorsal surface.	Tumors[2155]	6.8 mos. mean survival.	6.8 mos. mean.
Marchant, J., 1957	16 mice[2152]	Outbred albino	F	0.5% soln. at 2-week intervals	Skin	0[2151]		Still in progress.
Marchant, J., 1957	6 mice[2149]	CIF	F	0.2 ml. of 0.5% soln. in olive oil once.	Skin	Tumors[2152]	16.5 mos. mean survival.	16.5 mos. mean.
Norden, G., 1957	10 mice	D-Z	M	0.05 ml. of 0.5% soln. in peanut oil twice wkly. for 6–16 doses.	P.O., stomach tube.	Tumors[2153]	4 at 40 d	At least 56 d.
Norden, G., 1957	4 mice	D–Z	F	0.05 ml. of 1% soln. in peanut oil twice wkly. for 14–17 doses.	P.O., stomach tube.	Tumors[2164]	1 at 60 d	60 d. or more.
Norden, G., 1957	10 mice	D-Z	M	0.02 ml. of 2% soln. in peanut oil once wkly. for 4–8 doses.	P.O., stomach tube.	Tumors[2165]	7 at 40 d	At least 44 d.
Norden, G., 1957	5 mice	D-Z	M	0.05 ml. of 2% soln. in peanut oil twice wkly. for 8–10 doses.	P.O., stomach tube.	0	5 at 20 d	34 d.
Norden, G., 1957	19 mice	Street	9 M, 10 F	3% soln. in peanut oil once wkly. for 4 wks., off 1 mo., repeat dosage—total dose 10 mg.	P.O., stomach tube.	Tumors[2165]	12 at 90 d	At least 228 d.
Norden, G., 1957	17 mice	White	7 M, 10 F	3% soln. in peanut oil once wkly. for 4 wks., off 1 mo., repeat dosage—total dose 10 mg.	P.O., stomach tube.	Tumors[2167]	16 at 90 d	At least 350 d.
Norden, G., 1957	16 mice	Grey	M	3% soln. in peanut oil once wkly. for 4 wks., off 1 mo., repeat dosage—total dose 10 mg.	P.O., stomach tube.	Tumors[2158]	8 at 90 d	At least 90 d.

[2149] At 4 months.
[2152] Breeding.
[2155] 1 mammary tumor.
[2157] 5 with ovarian granulosa cell tumors; 4 with mammary tumors.
[2158] 1 ovarian granulosa cell tumor.
[2159] 4 with ovarian granulosa cell tumors; 1 with mammary tumor.
[2150] 2 (50%) mammary tumors.
[2151] Avg. 4.8 litters/breeder. Fertility unaffected.
[2162] 2 with ovarian granulosa cell tumors; 1 mammary tumor.
[2163] Forestomach tumors: 1 papilloma, 1 carcinoma at 56 days.
[2154] 2 forestomach carcinomas at 55 days.
[2165] 1 forestomach carcinoma at 44 days.
[2166] 13 forestomach papillomas; 9 forestomach carcinomas; 9 pulmonary adenomas; 2 lymphoblastomas; 1 leukemia; 1 pulmonary-mediastinal spindle cell sarcoma.
[2167] 13 forestomach papillomas; 4 forestomach carcinomas; 15 pulmonary adenomas; 7 lymphoblastomas; 6 leukemias; 1 oral squamous epithelial carcinoma; 1 cecal adenocarcinoma; 1 reticulum cell sarcoma.
[2158] 1 forestomach papilloma; 2 pulmonary adenomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
Norden, G., 1957	20 mice	D-Z	10 āā	3% soln. in Tween 20 once wkly. for 4 wks., off 1 mo., repeat for 3 wks.	P.O., stomach tube.	Tumors[2169]	19 at 90 d	300 d.
Norden, G., 1957	5 mice	D-Z	F	0.05 ml. of 2% soln. in peanut oil twice wkly. for 8 doses.	P.O., stomach tube.	Tumors[2170]	5 at 20 d	31 d.
Norden, G., 1957	10 mice	D-Z	F	0.02 ml. of 3% soln. in peanut oil once wkly. for 6–9 doses.	P.O., stomach tube.	Tumors[2171]	5 at 60 d	At least 77 d.
Norden, G., 1957	15 mice	D-Z	M	0.05 ml. of 3% soln. in peanut oil once.	P.O., stomach tube.	Tumors[2172]	3 at 60 d	At least 60 d.
Norden, G., 1957	12 mice	D-Z	M	0.05 ml. of 3% soln. in peanut oil twice wkly. for 2 doses.	P.O., stomach tube.	Tumors[2173]	10 at 20 d	At least 33 d.
Norden, G., 1957	14 mice	D-Z	M	0.05 ml. of 3% soln. in peanut oil once wkly. for 2 doses.	P.O., stomach tube.	Tumors[2174]	2 at 60 d	At least 60 d.
Norden, G., 1957	7 mice	D-Z	M	0.05 ml. of 3% soln. in peanut oil twice wkly. for 4 doses.	P.O., stomach tube.	Tumors[2175]	5 at 90 d	At least 130 d.
Norden, G., 1957	25 mice	D-Z	M	0.02 ml. of 4% soln. in eugenol & peanut oil once wkly. for 2–8 doses.	P.O., stomach tube.	Tumors[2176]	4 at 40 d	54 d.
Norden, G., 1957	10 mice	D-Z	M	0.05 ml. of 6% soln. in Tween 20 once wkly. for 1–7 doses.	P.O., stomach tube.	Tumors[2177]	8 at 90 d	250 d.
Norden, G., 1957	11 mice	D-Z	F	0.05 ml. of 6% soln. in Tween 20 once wkly. for 1–7 doses.	P.O., stomach tube.	Tumors[2178]	9 at 90 d	250 d.
Norden, G., 1957	10 mice	D-Z	M	Ca. 2–4 ml. of 0.01% soln. Tween 20 diluted 1:260 water daily for 35–60 d.	P.O., stomach tube.	Tumors[2179]	4 at 90 d	154 d.
Norden, G., 1957	10 mice	D-Z	F	Ca. 2–4 ml. of 0.01% soln. Tween 20 diluted 1:260 water daily for 21–60 d.	P.O., stomach tube.	Tumors[2180]	1 at 90 d	132 d.
Norden, G., 1957	9 mice	Grey	M	Ca. 2–4 ml. of 0.01% soln. Tween 20 diluted 1:260 water daily for 35–60 d.	P.O., stomach tube.	Tumors[2172]	6 at 90 d	At least 90 d.
Norden, G., 1957	3 mice[2181]	C3H	F	Ca. 2–4 ml. of 0.01% soln. Tween 20 diluted 1:260 water for 60 d.	P.O., stomach tube.	Tumors[2182]	3 at 90 d	285 d.
Norden, G., 1957	13 mice[2181]	D-Z	F	Ca. 2–4 ml. of 0.01% soln. Tween 20 diluted 1:260 water daily for 35–60 d.	P.O., stomach tube.	Tumors[2183]	11 at 90 d	356 d.

[2169] 16 forestomach papillomas; 8 forestomach carcinomas; 18 pulmonary adenomas; 8 lymphoblastomas; 10 leukemias.
[2170] 1 forestomach carcinoma at 31 days.
[2171] 3 forestomach papillomas.
[2172] 2 forestomach papillomas.
[2173] 1 forestomach papilloma.
[2174] 1 forestomach papilloma at 52 days.
[2175] 3 forestomach papillomas; 1 forestomach carcinoma; 7 pulmonary adenomas; 1 oral squamous epithelial carcinoma.
[2176] Forestomach tumors: 5 papillomas; 2 carcinomas.
[2177] 8 forestomach papillomas; 3 forestomach carcinomas; 8 pulmonary adenomas; 5 leukemias; 3 lymphoblastomas.
[2178] 8 forestomach papillomas; 5 forestomach carcinomas; 8 pulmonary adenomas; 4 leukemias; 2 lymphoblastomas.
[2179] 6 forestomach papillomas; 1 forestomach carcinoma; 1 lymphoblastoma.
[2180] 7 forestomach papillomas; 1 forestomach carcinoma.
[2181] Forestomach extirpated 5 days before treatment.
[2182] 1 papilloma, 1 carcinoma at 285 days.
[2183] 3 forestomach papillomas at 356 days; 3 pulmonary adenomas; 1 S.C. spindle cell sarcoma; 1 cardial papilloma.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
Norden, G., 1957	24 mice	C3H	16 M, 8 F	3% soln. in peanut oil once wkly. for 4 wks., off 1 mo., repeat dosage—total dose 10 mg.	P.O., stomach tube.	Tumors[2184]	15 at 90 d	At least 308 d.
Norden, G., 1957	40 mice	DBA	20 āā	3% soln. in peanut oil once wkly. for 4 wks., off 1 mo., repeat dosage—total dose 10 mg.	P.O., stomach tube.	Tumors[2185]	5 at 90 d	At least 256 d.
Norden, G., 1957	30 mice	Grey		0.05 ml. of 3% soln. in peanut oil twice wkly. for 2 wks.	P.O., stomach tube.	Tumors[2186]	2 at 205 d	395 d.
Norden, G., 1957	4 mice[2187]	D-Z	M	0.04 ml. of 1% soln. in peanut oil every 4 hrs. for 10 doses.	P.O., stomach tube.	Tumors[2188]	4 at 90 d	At least 90 d.
Norden, G., 1957	6 mice	D-Z	M	0.04 ml. of 1% soln. in peanut oil every 4 hrs. for 10 doses.	P.O., stomach tube.	Tumors[2189]	6 at 90 d	At least 90 d.
Norden, G., 1957	5 mice	D-Z	M	0.04 ml. of 1% soln. in Tween 20 every 4 hrs. for 10 doses.	P.O., stomach tube.	Tumors[2190]	3 at 90 d	At least 90 d.
Norden, G., 1957	17 mice[2191]	D-Z	F	0.05 ml. of 0.1% soln. in peanut oil 14 wkly. for 34 doses.	P.O., stomach tube.	Tumors[2192]	9 at 90 d	At least 90 d.
Norden, G., 1957	10 mice[2193]	D-Z	M	0.04 ml. of 3% soln. in peanut oil twice wkly. for 5–7 doses.	P.O., stomach tube.	Tumors[2194]	2 at 90 d	At least 90 d.
Norden, G., 1957	10 mice[2193]	D-Z	F	0.04 ml. of 3% soln. in peanut oil twice wkly. for 5–8 doses.	P.O., stomach tube.	Tumors[2195]	3 at 90 d	At least 208 d.
Norden, G., 1957	11 mice[2196]	D-Z	M	0.04 ml. of 3% soln. in peanut oil twice wkly. for 8 doses.	P.O., stomach tube.	Tumors[2197]	1 at 90 d	At least 180 d.
Norden, G., 1957	4 mice[2198]	D-Z	F	0.04 ml. of 3% soln. in peanut oil twice wkly. for 8 doses.	P.O., stomach tube.	0	3 at 90 d	At least 90 d.
Norden, G., 1957	10 mice[2198]	D-Z	M	0.04 ml. of 3% soln. in peanut oil twice wkly. for 7–8 doses.	P.O., stomach tube.	Tumors[2199]	3 at 90 d	At least 112 d.
Norden, G., 1957	29 mice	D-Z	18 M, 11 F	3% soln. in peanut oil once wkly. for 4 wks., off 1 mo., repeat dosage—total dose 10 mg.	P.O., stomach tube.	Tumors[2200]	100% at 90 d	At least 331 d.
Norden, G., 1957	5 mice[2198]	D-Z	F	0.04 ml. of 3% soln. in peanut oil twice wkly. for 8 doses.	P.O., stomach tube.	Tumors[2201]	3 at 90 d	At least 151 d.

[2184] 18 forestomach papillomas; 13 forestomach carcinomas; 4 pulmonary adenomas; 6 lymphoblastomas; 4 leukemias; 2 hepatomas.
[2185] 5 forestomach papillomas; 2 pulmonary adenomas; 1 leukemia.
[2186] Pulmonary carcinoma, hepatoma, granulosa cell tumor in single 395 day survivor.
[2187] Forestomach extirpated 109 days before treatment.
[2188] 4 pulmonary adenomas.
[2189] 4 pulmonary adenomas; 1 lymphoblastoma; 3 leukemias; 1 pulmonary-mediastinal spindle cell sarcoma; 1 otic squamous epithelial tumor.
[2190] 3 pulmonary adenomas; 2 lymphoblastomas; 1 leukemia.
[2191] Forestomach extirpated 17 days before treatment.
[2192] 3 pulmonary adenomas; 1 lymphoblastoma.
[2193] Forestomach extirpated, gastric mucosa cauterized 10 days before treatment.
[2194] 1 forestomach papilloma, 1 pulmonary adenoma.
[2195] 2 forestomach papillomas; 1 gastric sarcoma; 1 pulmonary adenoma.
[2196] Forestomach extirpated, gastric mucosa cauterized 30 days before treatment.
[2197] 7 papillomas, 1 forestomach carcinoma.
[2198] Forestomach extirpated 1 day before treatment.
[2199] 8 papillomas and 1 forestomach carcinoma; 1 with penile carcinoma and anal papilloma; 2 pulmonary adenomas; 1 lymphoblastoma; 1 otic squamous cell epithelial tumor.
[2200] 27 papillomas and 12 forestomach carcinomas; 24 pulmonary adenomas; 6 lymphoblastomas; 5 leukemias; 1 hepatoma.
[2201] 3 papillomas and 1 forestomach carcinoma; 1 pulmonary adenoma; 1 salivary gland squamous cell epithelial tumor.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
Prodi, G., and Maltoni, C., 1957.	6 hamsters	Syrian golden		0.2% in acetone, painted once wkly. for 70 d.	Skin[2202]			70 d.
Prodi, G., and Maltoni, C., 1957.	4 guinea pigs	Albino		0.3% in acetone, painted twice wkly. for 90 d.	Skin	0[2203]		90 d.
Prodi, G., and Maltoni, C., 1957.	6 rats	Albino		0.3% in acetone, painted twice wkly. for 120 d.	Skin	([2204])		120 d.
Prodi, G., and Maltoni, C., 1957.	14 mice	Albino		0.2% in acetone, painted once wkly	Skin	0[2203]	60% mortality	30 d
Prodi, G., and Maltoni, C., 1957.	14 rabbits	White		0.3% in acetone, painted twice wkly. for 70 d.	Skin	([2205])		70 d.
Prodi, G., and Maltoni, C., 1957.	3 rabbits	Albino		0.3% acetone soln. twice wkly	Skin, l. flank	Tumors[2206]		Up to 116 d.
Prokof'eva, E. I., 1957	Rabbits			8–12 mg. in paraffin wax pellets[2207]	R. tibial metaphysis implant.	Tumors[2208]		At least 12 mos.
Salley, J. J., 1957	24 hamsters			0.5% in heavy mineral oil painted 3 times per wk. for 5 wks.	Both cheek pouches.	Tumors[2209]	1 killed after each application.	9 wks.
Salley, J. J., 1957	24 hamsters			0.5% in mineral oil thrice wkly., total 16 applications.	Painted both cheek pouches.	Tumors[2210]	1 killed 24 hrs. after each application.	9 wks.
Schnitzer, A., 1957	1 rabbit			100 μg. 3 times wkly. for 2 mos	Skin	Tumors[2211]		At least 2 mos.
Schnitzer, A., 1957	1 rabbit			100 μg. 3 times a wk. for 2 mos. at the same time 5 mg. hydrocortisone 3 times wkly. for 3 mos. S.C.	Skin	Tumors[2212]		At least 3 mos.
Shubik, P., and Della Porta, G., 1957.	10 mice	Swiss	M	Approx. 0.08 ml. of 2% soln. in purified acetone, 6 d./wk. up to 6 wks.	Skin	0	3 died at 11 d., 1 at 13, 14, 15, 17 & 18 d., 1 at 5 & 6 wks.	6 wks.
Shubik, P., and Della Porta, G., 1957	10 mice	Swiss	M	10 mg. as 2% soln. in purified acetone once.	Skin	Tumors[2213]	9 died by 11 d	3 mos.
Standish, S. M., 1957	Rats[2214]	Albino Sprague-Dawley.	M	1 mm. long pellet containing 20% mixture by wt. in carbowaxes.	L. submaxillary salivary gland implant.	Tumors[2215]	Sacrificed at 1, 2, 4, 8, & 12 wks.	12 wks.
Tabah, E. J., et al., 1957	Hamsters			Saturated soln. in chloroform 3 times/wk. for 12 mos.	Cheek pouch mucosa.	Tumors[2216]		12 mos.

[2202] Histological study of dermis. Dermal tumors after 2 months.
[2203] Histological study of dermis. Epidermal hyperplasia.
[2204] Histological study of dermis. Dermal tumors at end of treatment.
[2205] Histological study of dermis. Dermal tumors at 30th day.
[2206] Of dermis.
[2207] Multiple diagnostic radiographs.
[2208] Osteogenic sarcomas.
[2209] Squamous cell papillomas and carcinomas.
[2210] Papillomas after 15 applications; squamous cell carcinomas at 9 weeks.
[2211] Papillomas with early carcinomatous changes.
[2212] Carcinomatous lesions.
[2213] 1 with 8 papillomas peripheral to treated area.
[2214] Weanling and adult.
[2215] 9 epidermoid carcinomas (4 at 8 weeks).
[2216] 10% with squamous cell papillomas and cheek pouch carcinomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
Vellios and Griffin, 1957	48 rats[195]	Wistar	F	Nylon thread impregnated with carcinogen dissolved in an equal volume of melted beeswax.[2217]	Thread suspended in the cervical canal.	13 (of the uterine cervix).[2218]	39 survived beyond 1st wk.	Sacrificed at 28 wks.
Vesselinovitch and Gilman, 1957.	20 mice[2219]	(C57BL x C3H)F_1.	10 M, 10 F	Single painting of 1.5% soln. of DMBA in light mineral oil.[2220]	Skin	75% (pap.)[2221].	All alive at appearance of 1st tumor.	Approx. 110 d.
Vesselinovitch and Gilman, 1957.	20 mice[2219]	(C57BL x C3H)F_1.	10 M, 10 F	Single paintings of 1.5% soln. of DMBA in light mineral oil.[2222]	Skin	65% (pap.)[2223].	All alive at time of 1st tumor.	Approx. 110 d.
Vesselinovitch and Gilman, 1957.	20 mice[2219]	(C57BL x C3H)F_1.	10 M, 10 F	Two paintings of 1.5% soln. of DMBA in light mineral oil, separated by a 30 d. interval.[2222]	Skin	78% (pap.)[2224].	18 alive at time of 1st tumor.	Approx. 110 d.
Vesselinovitch and Gilman, 1957.	20 mice[2219]	(C57BL x C3H)F_1.	10 M, 10 F	2 paintings of a 1.5% soln. of DMBA in light mineral oil, separated by a 30 d. interval.[2222]	Skin	89% (skin tumors).[2225]	19 alive at time of 1st tumor.	Approx. 110 d.
Vesselinovitch and Gilman, 1957.	20 mice[2219]	(C57BL x C3H)F_1.	10 M, 10 F	Single paintings of a 1.5% soln. of DMBA in light mineral oil.	Skin	0	100% survival	Approx. 110 d.
Whiteley, H. J., 1957	18 rabbits	Chinchillas	9 āā	2% w/w in lanolin painted at wkly. intervals for 5 mos.	Skin, flank	Tumors[2226]		12 mos.
Zeppa, R., and Womack, N. A., 1957.	24 mice	C3H	M	0.03–0.05 ml. of 0.5% soln. in mineral oil.	Inj. into gallbladder.	0	Good survival	1 yr.
Zeppa, R., and Womack, N. A., 1957.	24 mice	C3H	M	0.5% in mineral oil+5% cholesterol	Inj. into gallbladder.	0	Good	1 yr.
Berenblum, I., et al., 1958.	Mice[2227]	Swiss		0.5% soln. in benzene once	Skin, interscapular	6[2228]	24 at 10 wks	10 wks.
Berenblum, I., et al., 1958	Mice[2229]	Swiss		1.5% soln. in liq. paraffin once[2230]	Skin, interscapular.	2[2231,2232]	30 at 34 wks	About 34 wks.
Berenblum, I., et al., 1958	Mice[2229]	Swiss		1.5% soln. in liq. paraffin once[2233]	Skin, interscapular.	16[2134,2232]	20 at 31 wks	31 wks.
Berenblum, I., et al., 1958	Mice[2235]	Swiss		1.5% soln. in liq. paraffin once	Skin, interscapular.	0	23 at 30 wks	30 wks.

[195] Latent periods 275–625 days.
[2217] Beeswax used to retard carcinogen release.
[2218] 11 epidermoid carcinomas (associated with prior papillomas); 1 adenoacanthoma; 1 carcinosarcoma.
[2219] Age: approx. 3 months.
[2220] 12 (3/wk.) applications of 5% croton oil in mineral oil followed by 21 semi-weekly applications; begun 1 week later.
[2221] 86 tumors; 5.7/tumor-bearer. Avg. latent period 91 days.
[2222] 12 (3/wk.) applications of 5% croton oil in mineral oil followed by 21 semi-weekly applications; begun 40 days later.
[2223] 8.9 tumors; 6.8/tumor-bearer. Avg. latent period 88 days.
[2224] 141 tumors; 10.0/tumor-bearer. Avg. latent period 78 days.
[2225] 254 tumors (3 carcinomas, 251 papillomas); 14.9/tumor-bearer. Avg. latent period 81 days.
[2226] 16 with 296 tumors ("self-healing carcinomas") during quiescent phase of hair growth cycle (75% regressed). 598 squamous papillomas during active phase of hair growth. Both cell types exhibited invasive growth.
[2227] Age: 20 days; hair growth in first resting phase.
[2228] 25% with papillomas; 0.3±0.1/mouse.
[2229] Age: 22 days; hair growth in first resting phase.
[2230] 60 semi-weekly applications of 0.5% croton oil in paraffin begun at second resting phase of hair growth (age 50 days).
[2231] 93% with papillomas; 5.6±0.4/mouse.
[2232] Paraffin, and croton oil in paraffin, promoter treated controls were negative.
[2233] 60 semi-weekly applications of 0.5% croton oil in paraffin begun at second hair growth cycle (age 30 days).
[2234] 60% with papillomas; 4.9±1.0/mouse.
[2235] Hair cycle in second growth phase (age 32 days).

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
Berenblum, I., et al., 1958	Mice[2235]	Swiss		1.5% soln. in liq. paraffin once	Skin, interscapular.	1[2237]	30 at 30 wks	30 wks.
Berenblum, I., et al., 1958	Mice[2238]	Swiss		1.5% soln. in liq. paraffin once	Skin, interscapular.	0	17 at 30 wks	30 wks.
Berenblum, I., et al., 1958	Mice[2239]	Swiss		1.5% soln. in liq. paraffin once	Skin, interscapular.	0	20 at 30 wks	30 wks.
Berenblum, I., et al., 1958	Mice[2238]	Swiss		0.5% soln. in benzene once	Skin, interscapular.	1[2240]	20 at 10 wks	10 wks.
Berenblum, I., et al., 1958	Mice[2239]	Swiss		0.5% soln. in benzene once	Skin, interscapular.	5[2241]	20 at 10 wks	10 wks.
Berenblum, I., et al., 1958	Mice[2242]			1.5% soln. in liq. paraffin once[2243]	Skin, interscapular.	6[2244]	14 at 33 wks	About 33 wks.
Berenblum, I., et al., 1958	Mice[2229]	Swiss		1.5% soln. in liq. paraffin once[2245]	Skin, interscapular.	0	20 at 31 wks	About 31 wks.
Berenblum, I., et al., 1958	Mice[2229]	Swiss		1.5% soln. in liq. paraffin once[2245]	Skin, interscapular.	0	26 at 34 wks	About 34 wks.
Berenblum, I., et al., 1958	Mice[2242]	Swiss		1.5% soln. in liq. paraffin once[2247]	Skin, interscapular.	0	25 at 31 wks	About 31 wks.
Berenblum, I., et al., 1958	Mice[2242]	Swiss		1.5% soln. in liq. paraffin once[2245]	Skin, interscapular.	0	22 at 33 wks	About 33 wks.
Berenblum, I., et al., 1958	Mice[2248]	Swiss		0.3% soln. in liq. paraffin once[2249]	Skin, interscapular.	49[2250]	50 at 12 wks	About 12 wks.
Berenblum, I., et al., 1958	Mice[2235]	Swiss		0.3% soln. in liq. paraffin once[2249]	Skin, interscapular.	39[2251]	39 at 12 wks	About 12 wks.
Berenblum, I., et al., 1958	Mice[2252]	Swiss		0.5% soln. in benzene once[2253]	Skin, interscapular.	11[2254]	11 at 20 wks	About 20 wks.
Berenblum, I., et al., 1958	Mice[2255]	Swiss		0.5% soln. in benzene once[2253]	Skin, interscapular.	20[2256]	20 at 20 wks	About 20 wks.
Berenblum, I., et al., 1958	Mice[2236]	Swiss		0.5% soln. in benzene once[2253]	Skin, interscapular.	5[2257]	13 at 20 wks	About 20 wks.

[2229] Age, 22 days, hair growth in first resting phase.
[2235] Hair cycle in second growth phase (age 32 days).
[2235] Hair cycle in second resting phase (age 55 days).
[2237] 3% with papillomas.
[2238] 33 days old; hair cycle in second growth phase .
[2239] Hair cycle in second resting phase (age 52 days).
[2240] 5% with papillomas.
[2241] 25% with papillomas; 0.4±0.2/mouse.
[2242] Hair cycle in first growth phase (age 9 days).
[2243] 60 semi-weekly applications of 0.5% croton oil in paraffin begun at second hair growth cycle (age 30 days).
[2244] 43% with papillomas. 0.8±0.3/mouse.
[2245] 60 semi-weekly applications of liquid paraffin begun at second hair growth cycle (age 30 days).
[2245] 60 semi-weekly applications of liquid paraffin begun at second resting phase of hair growth cycle (age 50 days).
[2247] 60 semi-weekly applications of liquid paraffin begun at first resting phase of hair growth cycle (age 19 days).
[2248] Hair cycle in second resting phase (age 45 days).
[2249] 20 semiweekly applications of 0.5% croton oil in paraffin begun 2 weeks later.
[2250] 98% with papillomas; 7.2±0.5/mouse.
[2251] 100% with papillomas; 10.2±0.7/mouse.
[2252] 48 days old, hair cycle in second resting phase; (age 48 days).
[2253] 20 semiweekly applications of 0.5% croton oil in paraffin begun 10 weeks later.
[2254] 100% with papillomas; 17.1±0.9/mouse. 9 with papillomas at 10 weeks.
[2255] 31 days old, hair cycle in second growth phase. (age 31 days).
[2256] 100% with papillomas; 17.3±1.0/mouse.
[2257] 38% with papillomas; 0.4±0.1/mouse. 8 with papillomas at 10 weeks.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
Berenblum, I., et al., 1958	Mice[2258]	Swiss		0.5% soln. in benzene once[2253]	Skin, interscapular.	0	13 at 20 wks	About 20 wks.
Berenblum, I., et al., 1958	Mice[2259]	Swiss		0.5% soln. in benzene once	Skin, interscapular.	2[2260]	32 at 10 wks	At least 10 wks.
Berenblum, I., et al., 1958	Mice[2261]	Swiss		0.5% soln. in benzene once	Skin, interscapular.	8[2262]	29 at 10 wks	At least 10 wks.
Berenblum, I., et al., 1958	Mice[2242]	Swiss		1.5% soln. in liq. paraffin once[2264]	Skin, interscapular.	31[2263]	35 at 31 wks	About 31 wks.
Biilmann-Petersen, M. L., and Andreasen, E., 1958.	45 mice	ST/Eh albino	F	0.05 ml. of 0.5% soln. in benzene once.[2265]	Skin	Tumors[2266]		Over 110 d.
Biilmann-Petersen, M. L., and Andreasen, E., 1958.	66 mice	ST/Eh albino	F	0.05 ml. of 0.5% soln. in benzene once.[2267]	Skin	Tumors[2268]		
Biilmann-Petersen, M. L., and Andreasen, E., 1958.	55 mice	ST/Eh albino	F	0.05 ml. of 0.5% soln. in benzene once.[2269]	Skin	Tumors[2270]		Over 110 d.
Biilmann-Petersen, M. L., and Andreasen, E., 1958.	52 mice	ST/Eh albino	F	0.05 ml. of 0.5% soln. in benzene once.[2267]	Skin	Tumors[2271]		
Borum, K., 1958	149 mice	L	83 M, 66 F	0.05 ml. of 0.5% soln. in benzene once.[2269]	Skin	Tumors[2272]	Many died early	
Borum, K., 1958	111 mice	ST/Eh albino	57 M, 54 F	0.05 ml. of 0.5% soln. in benzene once.[2265]	Skin	Tumors[2272]	Many died early	
Borum, K., 1958	49 mice	ST/Eh	33 M, 16 F	0.05 ml. of 0.5% soln. in benzene once.[2269]	Skin	Tumors[2272]	Many died early	
Borum, K., 1958	49 mice	ST/Eh albino inbred.	M & F	0.05 ml. of 0.5% soln. in benzene once.[2273]	Skin, interscapular region.	0[2274]	Life	Up tp 400 d.
Borum, K., 1958	160 mice	ST/Eh albino		0.05 ml. of 0.5% soln. in benzene once.[2275]	Skin	Tumors[2276]		
Borum, K., 1958	149 mice	L		0.05 ml. of 0.5% soln. in benzene once.[2275]	Skin	Tumors[2276]		
Boutwell, R. K., and Bosch, D. K., 1958.	30 mice	Albino	F	75 μg. once, 1 wk. later given twice wkly. application of 0.5% soln. of croton oil for 54 wks.	Skin	Tumors[2277]		At least 54 wks.

[2242] Hair cycle in first growth phase (age 9 days).
[2263] 20 semiweekly applications of 0.5% croton oil in paraffin begun 10 weeks later.
[2258] 30 days old, hair cycle in third growth phase. (age 30 days).
[2259] Hair cycle at end of second resting phase. (age 72 days).
[2260] 6% with papillomas; 0.06±0.004/mouse.
[2261] Hair cycle at start of third resting phase. (age 105 days).
[2262] 28% with papillomas; 0.3±0.3/mouse.
[2263] 89% with papillomas; 2.6±0.4/mouse.
[2264] 60 semiweekly applications of 0.5% croton oil in paraffin begun at beginning of first resting phase of hair growth cycle (age 19 days).
[2265] Applied during second resting phase of hair growth cycle.
[2266] 18 (40%) with papillomas (6 regressed).
[2267] Daily administration of 0.2 mg. cortisone I.P. begun day before treatment.
[2268] 22/66 (39%) with papillomas (7/26 regressed).
[2269] Applied during first resting phase of hair growth cycle.
[2270] 31 (56%) with papillomas, (13 regressed).
[2271] 27/52 (52%) with papillomas, (14/27 regressed).
[2272] Skin papillomas (some progressed to malignancy).
[2273] Those under 16 days of age received 0.025 ml. of 0.5% solution in benzene.
[2274] Epithelial hyperplasia.
[2275] Applied during first or second resting phase of hair growth cycle.
[2276] Papillomas.
[2277] First papillomas at avg. of 10 wks., 75% at 36 wks.; carcinomas at avg. of 36 wks., 75% at 44 wks.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
Boutwell, R. K., and Bosch, D. K., 1958.	30 mice	Albino	F	75 μg. once, 1 wk. later given twice wkly. applications of 25 μl. undiluted creosote for 28 wks.	Skin	Tumors[2278]		At least 28 wks.
Boutwell, R. K., and Bosch, D. K., 1958.	30 mice	Albino	F	75 μg. once, 1 wk. later given twice wkly. applications of 25 μl. benzene for 56 wks.	Skin	0		At least 56 wks.
Cherkasskii, L. A., Vopr. onkol. *4*, 28–37 (1958).	65 rabbits			10 mg. in paraffin pellets	Medullary cavity of tibia.	Tumors[5424]		521 d.
Dobrynin, Y. V., 1958	30 mice	CC57		0.2 ml. of 0.5% soln. in peach oil 10 times at wk. intervals.	P.O., stomach tube.	Tumors[2279]		At least 3½ mos.
Dobrynin, Ia. V., et al., 1958	Mice	C57 brown, C3HA, (abf) x C57 (afc).		0.2 ml. of 0.5% soln. in oil	Inj. into wall glandular stomach.	Tumors[2280]		
Dobrynin, Ia. V., et al., 1958	Mice	C57 brown, C3HA, (abf) x C57 (afc).		0.2 ml. of 0.5% soln. in oil once wkly. for 10–14 wks.	P.O., stomach tube.	Tumors[2281]		At least 14 wks.
Ghadially, F. N., 1958	12 rabbits	Agouti	M	1% soln. in mixture of equal part anhydrous lanolin & liq. paraffin once a wk., for 8 wks. & continued sporadically up to 4 mos.	Skin, back & ears.	Tumors[2282]		At least 4 mos.
Glucksmann, A., and Cherry, C. P., 1958.	28 rats	Hooded, virgin	F	1% soln. in acetone painted once wkly. for 28 wks., thereafter twice wkly. for 27 wks.	Intravaginal	Tumors[2283, 2284].	22 survived 250 d. or more.	Up to 410 d.
Glucksmann, A., and Cherry, C. P., 1958.	16 rats[2285]	Hooded	F	1% soln. in acetone painted twice wkly.	Intravaginal	Tumors[2284, 2286].		Up to 410 d.
Gorski, T., Nowotwory *8*, 59–62, (1958).	115 mice	A, C57, Hybrid D.	M	0.015 and 0.03 mg. per g. body wt	Pancreas	3[5425]		At least 5 mos.
Graffi, A., et al., 1958	27 rabbits 6 mos. old.	Freud-Silver & Chinchilla.		0.5% in acetone every other d. for 30–40 d., followed by croton oil applications after 2 mos. in increasing concentration from 5% in m.o. to 10% in acetone.	Skin[2287]	Tumors[2288]		
Heslop, J. H., 1958	45 rabbits	Cross Dutch & Copenhagen White.		0.5% soln. in benzene twice wkly. for 20 wks.[2289]	Skin, ear	40[2290]	All sacrificed	20 wks.

[2278] First papillomas at avg. of 16 wks., approx. 100% at 20 wks.; carcinomas at avg. of 23 wks., avg. of 75% at 28 wks.
[2279] 1 abdominal carcinosarcoma at 3½ mos. Transplantation study; tumor maintained through 40 generations.
[2280] Forestomach squamous cell carcinomas and gastric sarcoma.
[2281] 25% with forestomach squamous cell carcinoma. Transplantation study; tumors maintained through 37 generations.
[2282] Papillomas and kerato-acanthomas.
[2283] 1 papilloma and 1 vaginal squamous cell carcinoma. 15 vulval carcinomas and 6 vulval warts at avg. of 332 days. Hair follicle basal cell carcinomas. 16 vaginal sarcomas at avg. of 333 days.
[2284] Acetone controls negative.
[2285] Castrated 1–2 mos. before treatment.
[2286] 11 with vulval carcinoma. 3 with vaginal fibrosarcomas, 1 adrenal tumor.
[2287] Thiersch homotransplant of dermis 2–3 wks. after treatment.
[2288] 50% dermal transplants developed tumors; (predominately benign); avg. 5/field at 18 mos. 60% with tumors in transplant origin site.
[2289] 14 with 0.5 cm. hole punched in treated area at 3–6 weeks.
[2290] Papillomas (molluscum sebaceum): 2 malignant tumors.
[5424] Osteogenic sarcomas.
[5425] Pancreatic sarcomas. 6 "other-organ" tumors.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
Lebedinskaia, S. I., and Soloviev, A. A., 1958.	24 rats		M	0.8 mg. in oil	S.C	Tumors[2291]	Killed from 4 mos. 3 wks. to 11.5 mos.	1 yr.
Lombard, 1958	6 adult rabbits.		5 F, 1 M	0.5% in acetone internal face of the ear two times wkly. for 4 wks.	Skin painting	4 tumors[2292]	100%	9 mos.
Marchant, J., 1958	9 mice[2293]	1 F	F	0.2 ml. of 0.5% soln. in olive oil applied in 16 drops, 4 on each dorsal & ventral surface at fortnightly intervals 8 times.[2294]	Skin	Tumors[2295]	Avg. 5.9 mos	At least 6 mos.
Marchant, J., 1958	43 mice	1F, virgin	F	0.20 ml. of 0.5% soln. in olive oil applied in 16 drops, 4 on each dorsal & ventral surface at fortnightly intervals 8 times.	Skin	Tumors[2295]	Avg. 6.7 mos	At least 8½ mos.
Meites, J., 1958	18 mice	Swiss CF_1	F	0.05 ml. of 1.0% soln. in dist. benzene.[2297]	Skin	Tumors[2298]	17 at 17 wks	17 wks.
Meites, J., 1958	21 mice	Swiss CF_1	F	0.05 ml. of 0.25% soln. in dist. benzene once.[2297]	Skin	Tumors[2299]	100%	17 wks.
Meites, J., 1958	20 mice	Swiss CF_1	F	0.05 ml. of 0.5% soln. in dist. benzene once.[2297]	Skin	Tumors[2300]	19 at 17 wks	17 wks.
Della Porta, G., et al., 1958	21 hamsters	Syrian golden	M	50 μg. in 0.05 ml. colloid once wkly. for 45 wks.	Endotracheal instillation.	Tumors[2301]	17 at 20 wks	70 wks.
Della Porta, G., et al., 1958	20 hamsters	Syrian golden	9 M, 11 F	100 μg. in 0.05 ml. colloid susp. once wkly. for 17 wks.	Endotracheal instillation.	Tumors[2302]	8 at 17 wks	35 wks.
Della Porta, G., et al., 1958	10 hamsters	Syrian golden	M	50 μg. in 0.05 ml. colloid susp. once wkly. for 12 wks.	Endotracheal Instillation.	Tumors[2303]	8 at 12 wks	64 wks.
Pregozhina, E. L., 1958	40 rats		F	2–5 mg. susp. in 0.5–1 ml. colloid infusion plus 0.25 mg. sinoestrol, given 2 inj. a d. apart then repeated in 2 mos.	I.V	31[2304]		Up to 20 mos.
Pregozhina, E. L., 1958	43 rats		38 M, 49 F	0.2–0.4 ml. of 0.5% soln. in peach oil daily for 12 wks., total dose 21 mg. per rat.	P.O., stomach tube.	Tumors[2305]	21 at 1 yr	Up to 16 mos.
Rask-Nielsen, R., 1958	22 mice[2306]	(C57BL x DBA)F_1.		0.02 mg. dissolved in 0.01 cc. paraffin 3–4 wks., after thymus implant.	Inj. into implanted thymus.	0[2307]	Life	33 mos.

[2291] 11 with fibrosarcoma; 1 angiosarcoma; 2 groups with different nervous system reactions.
[2292] All regressed.
[2293] Breeders.
[2294] Treated after first litter.
[2295] 2 mammary tumors: adenocarcinoma, spindle cell sarcoma or carcinosarcoma. 2 ovarian tumors or lesions.
[2296] 33 with mammary tumors: adenocarcinomas, spindle cell sarcomas and carcinosarcomas (19 multiple). 24 with ovarian tumors or lesions.
[2297] Weekly applications of croton oil in paraffin.
[2298] 14 with 33 dermal tumors at 17 weeks.
[2299] 15 with 86 tumors at 17 weeks.
[2300] 14 with 38 dermal tumors at 16 weeks.
[2301] 1 tracheal carcinoma (invasive). 1 laryngeal squamous cell carcinoma (invasive).
[2302] 1 male with laryngeal squamous cell carcinoma (invasive). 1 male with tracheoesophageal squamous cell carcinoma. 2 females with tracheal carcinoma.
[2303] 5 with forestomach papillomas; chronic tracheobronchitis.
[2304] 71 mammary tumors: 33 carcinomata, 2 carcinosarcomata and 36 adenomata and fibroadenomata. 2 Zymbal gland squamous cell carcinomas. 3 leucoses. 10 with 13 uterine tumors. 2 S.C. sarcomas. 2 dermal tumors. 1 orbital sarcoma.
[2305] 23 with 29 tumors: 1 mammary fibroadenoma; 8 Zymbal gland squamous cell carcinomas; 5 leucoses; 3 uterine tumors; 7 dermal tumors; 3 S.C. fibromas; 1 pulmonary carcinoma; 1 with multiple sarcomatous nodes.
[2306] Right flank, S.C., thymic implant from DBA mice (age 1–3 months).
[2307] 3 with leukemia, 12/67 controls with leukemia.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
Rask-Nielsen, R., 1958	10 mice[2308]	(C57BL x DBA)F_1.		0.02 mg. dissolved in 0.01 cc. paraffin 3–4 wks. after thymus implant.	Inj. into implanted thymus.	0[2309]	Life	35 mos.
Rask-Nielsen, R., 1958	23 mice[2310]	(C57BL x C3H)F_1.		0.02 mg. dissolved in 0.01 cc. paraffin 3–4 wks. after thymus implant.	Inj. into implanted thymus.	0[2311]	Life	35 mos.
Rask-Nielsen, R., 1958	29 mice[2308]	(C57BL x C3H)F_1.		0.02 mg. dissolved in 0.01 cc. paraffin 3–4 wks. after thymus implant.	Inj. into implanted thymus.	0[2312]	Life	35 mos.
Scholler, J., and Carnes, R. E., 1958.	Rats	Wistar		Unspecified amt. as oil emulsion	I.V	Tumors[2313]	Sacrificed at varying intervals.	
Tereshchenko, I. P., 1958	12 rats[2314]	White		0.2 ml. of 0.5% soln. (0.001 g.) in peach oil once.	S.C., l. thigh	Tumors[2315, 2318]		6.5 mos.
Tereshchenko, I. P., 1958	19 rats	White		0.5 mg	S.C., l. thigh	Tumors[2316, 2317]		227 d.
Vesselinovitch, S. D., 1958	Mice	(C57BL x C3H)F_1.	M & F	0.15 ml. of 0.25% soln. in light mineral oil twice at 30 d. interval.[2318]	Skin	Tumors[2319, 2320]	48 at 21 wks	At least 21 wks.
Vesselinovitch, S. D., 1958	Mice	(C57BL x C3H)F_1.	M & F	0.15 ml. of 0.25% soln. in light mineral oil thrice at 30 d. intervals.[2318]	Skin	Tumors[2320, 2321]	48 at 21 wks	At least 21 wks.
Vesselinovitch, S. D., 1958	Mice	(C57BL x C3H)F_1.	M & F	0.15 ml. of 0.25% soln. in light mineral oil once.[2318]	Skin	Tumors[2320, 2322]	54 at 21 wks	At least 21 wks.
Vesselinovitch, S. D., 1958	Mice	(C57BL x C3H)F_1.	M & F	0.15 ml. of 0.25% soln. in light mineral oil twice at 30 d. interval.[2323]	Skin	Tumors[2320, 2324]	58 at 25 wks	At least 25 wks.
Vesselinovitch, S. D., 1958	Mice	(C57BL x C3H)F_1.	M & F	0.15 ml. of 0.25% soln. in light mineral oil thrice at 30 d. intervals.[2325]	Skin	Tumors[2320, 2328]	46 at 29 wks	At least 29 wks.
Bock, F. G., and King, D. W., 1959.	15 mice	C57BL		2 drops (approx. 0.1 ml.) of 1.5% soln. in benzene,[2327] once.	Skin	Tumors[2328, 2329]		Up to 524 d.
Bock, F. G., and King, D. W., 1959.	16 mice	C57BL		2 drops (approx. 0.1 ml.) of 1.5% soln. in benzene once.	Skin	Tumors[2329, 2330]		Up to 524 d.

[2308] Right flank, S.C., thymic implant from C57B1 mice (age 1–3 months).
[2309] 4 with leukemia; 12/67 controls with leukemia.
[2310] Right flank, S.C., thymic implant from C3H mice (age 1–3 months).
[2311] 3 with leukemia; 4/28 controls with leukemia.
[2312] 6 with leukemia; 4/28 controls with leukemia.
[2313] 89% mammary tumors at 14 weeks.
[2314] Positive reflex conditioned to 2 stimuli prior to treatment.
[2315] 9 with tumors at $3\frac{1}{2}$–$6\frac{1}{2}$ months.
[2316] Study of nervous activity during carcinogenesis.
[2317] 11 with tumors at 87–227 days.
[2318] 33 semi-weekly applications of 1% hexane-extracted fraction from croton tiglium in acetone begun 7 days after first DMBA.
[2319] 320 papillomas; 3 carcinomas; latent period 14.6 weeks.
[2320] Croton tiglium extract controls negative.
[2321] 423 papillomas; 7 carcinomas; latent period 14.1 weeks.
[2322] 162 papillomas; 4 carcinomas; latent period 12.7 weeks.
[2323] 33 semi-weekly applications of 1% hexane-extracted fraction from croton tiglium in acetone begun 7 days after second DMBA.
[2324] 295 papillomas; 25 carcinomas; latent period 12.8 weeks.
[2325] 33 semi-weekly applications of 1% hexane-extracted fraction from croton tiglium in acetone begun 7 days after third DMBA.
[2326] 291 papillomas; 13 carcinomas; latent period 14.3 weeks.
[2327] Acetone applied 2 weeks later.
[2328] 3 forestomach papillomas; 3 lymphomas; 3 dermal tumors.
[2329] 33 benzene controls with 1 lymphoma.
[2330] 3 forestomach papillomas; 4 lymphomas; 1 dermal tumor.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
Bock, F. G., and King, D. W., 1959.	Mice[1792]	C57BL		0.5 mg. in 0.1 ml. heavy mineral oil 16 times at 3 to 7 d. intervals.	P.O., stomach tube.	Tumors[2331]	6 "effective" total	8–10 mos.
Bock, F. G., and King, D. W., 1959.	Mice[1792]	C57BL		0.5 mg. in 0.1 ml. heavy mineral oil 8 times at 3 to 7 d. intervals.	P.O., stomach tube.	Tumors[2332]	17 "effective" total.	8–10 mos.
Bock, F. G., and King, D. W., 1959.	Mice[1792]	C57BL		0.5 mg. in 0.1 ml. heavy mineral oil once.	P.O., stomach tube.	Tumors[2333]	13 "effective" total.	8–10 mos.
Bolonina, N. I., 1959	37 steppe lemmings.	Lagurus lagurus	17 F, 20 M	0.1 ml. of 0.5% soln. in peach oil 15 times at wkly. intervals, total dose 7.5 mg.	P.O., stomach tube.	Tumors[2334]	28 at 2 mos	16 mos.
Bolonina, N. I., 1959	19 steppe lemmings.	Lagurus lagurus	14 F, 5 M	0.5 mg. in 0.05 ml. of 1% soln. in peach oil.	Submandibular glands thru skin.	Tumors[2335]	13 at 3 mos	At least 3 mos.
Bolonina, N. I., 1959	29 steppe lemmings.	Lagurus lagurus	15 F, 14 M	2 drops of 0.5% soln. in benzene thrice wkly. for 52 applications, total dose 1.3 mg.	Skin	Tumors[2336]	23 at 38 d., 19 at 4 mos.	
Boutwell, R. K., and Bosch, D. K., 1959.	33 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2337]	Skin	Tumors[2338]	21 at 15 wks	15 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	33 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2339]	Skin	Tumors[2340]	27 at 15 wks	15 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	30 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2341]	Skin	Tumors[2342]	21 at 15 wks	23 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	30 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2343]	Skin	Tumors[2344]	20 at 15 wks	23 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	30 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2344]	Skin	Tumors[2345]	22 at 15 wks	15 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	30 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2346]	Skin	Tumors[2347]	28 at 15 wks	15 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	20 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once	Skin	Tumors[2348]	15 at 15 wks	15 wks.

[1792] Food withheld 24 hours before treatment.

[2330] 3 forestomach papillomas; 4 lymphomas; 1 dermal tumor.

[2331] 100% with forestomach papillomas; 1 with forestomach carcinoma. 6 total mineral oil controls negative.

[2332] 100% with forestomach papillomas; 2 with forestomach carcinomas. 16 total mineral oil controls negative.

[2333] 11 with forestomach papillomas.

[2334] 8/28 (28.6%) with tumors: 5 dermal sarcomas, 1 duodenal sarcoma at 3½ months, 1 dermal sarcoma at 10 months, 1 thymic reticulum cell sarcoma at 16 months.

[2335] 11/13 (84.6%) with S.C. polymorphic cell sarcomas after 3 months.

[2336] 100% with papillomas, first at 38 days. 17/19 with malignant tumors: 70% squamous cell carcinoma, 30% polymorphic cell sarcoma. 1 carcinosarcoma with metastases.

[2337] Semi-weekly application of 20% 3-chlorophenol in benzene for duration, begun 1 week later.

[2338] 67% with papillomas, avg. 1.38/mouse.

[2339] Semi-weekly application of 20% 2,4-dichlorophenol in benzene for duration, begun 1 week later.

[2340] 48% with papillomas; avg. 1.07/mouse. 11% with carcinoma.

[2341] Semi-weekly application of 20% 3,4-dimethylphenol in benzene for duration, begun 1 week later.

[2342] 95% with papillomas; avg. 2.66/mouse. 14% with carcinoma at 23 weeks.

[2343] Semi-weekly application of 20% 3,5-dimethylphenol in benzene for duration, begun 1 week later.

[2344] Semi-weekly application of 15% 1,2-dihydroxybenzene in benzene for duration, begun 1 week later.

[2345] 14% with papillomas; avg. 0.14/mouse.

[2346] Semi-weekly application of 20% 1,2,3-trihydroxybenzene in benzene for duration, begun 1 week later.

[2347] 4% with papillomas; avg. 0.04/mouse.

[2348] 7% with papillomas; avg. 0.07/mouse.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
Boutwell, R. K., and Bosch, D. K., 1959.	20 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2349]	Skin	Tumors[2350]	14 at 15 wks	15 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	35 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2361]	Skin	Tumors[2352]	31 at 15 wks	15 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	20 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once	Skin	Tumors[2353]	16 at 15 wks	53 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	30 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2349]	Skin	Tumors[2354]	26 at 15 wks	53 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	30 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2355]	Skin	Tumors[2356]	28 at 15 wks	23 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	30 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2358]	Skin	Tumors[2359]	27 at 15 wks	23 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	27 mice	Sutter	F	25 μl. of 0.3% soln. in acetone once.[2360]	Skin	Tumors[2361]	24 at 12 wks	12 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	27 mice	Sutter	F	25 μl. of 0.3% soln. in acetone once.[2362]	Skin	Tumors[2363]	17 at 12 wks	12 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	29 mice	Sutter	F	25 μl. of 0.3% soln. in acetone once.[2364]	Skin	Tumors[2365]	14 at 12 wks	12 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	28 mice	Sutter	F	25 μl. of 0.3% soln. in acetone once.[2366]	Skin	Tumors[2367]	20 at 12 wks	12 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	30 mice	Albino-Holtzman.	F	75 μg. in 0.3% soln. once[2368]	Skin	Tumors[2369]	28 at 20 wks	52 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	30 mice	Albino-Holtzman.	F	75 μl. in 0.3% soln. once[2370]	Skin	Tumors[2371]	29 at 20 wks	52 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	22 mice	Albino-Holtzman.	F	75 μg. in 0.3% soln. once[2372]	Skin	Tumors[2373]	21 at 20 wks	52 wks.

[2349] Semi-weekly application of 0.5% croton oil in benzene for duration, begun 1 week later.
[2350] 29% with papillomas; avg. 0.64/mouse.
[2361] Semi-weekly application of 20% 2-chlorophenol in benzene for duration, begun 1 week later.
[2352] 61% with papillomas; avg. 1.48/mouse. 10% with carcinoma.
[2363] 13% with papillomas; avg. 0.13/mouse. 6% with carcinoma at 53 weeks.
[2354] 50% with papillomas; avg. 1.38/mouse. 8% with carcinoma at 53 weeks.
[2365] Semi-weekly application of 20% 2,4-dimethylphenol in benzene for duration, begun 1 week later.
[2356] 50% with papillomas; avg. 1.21/mouse.
[2367] 50% with papillomas; avg. 1.21/mouse. 18% with carcinoma at 23 weeks.
[2358] Semi-weekly application of 20% 2,6-dimethylphenol in benzene for duration, begun 1 week later.
[2359] 30% with papillomas; avg. 0.44/mouse. 11% with carcinoma at 23 weeks.
[2360] Semi-weekly application of 20% 1,3-dihydroxybenzene in acetone for duration, begun 1 week later.
[2361] 17% with papillomas; avg. 0.29/mouse.
[2362] Semi-weekly application of 20% 2-methylphenol in benzene for duration, begun 1 week later.
[2363] 59% with papillomas; avg. 1.35/mouse.
[2364] Semi-weekly application of 20% 3-methylphenol in benzene for duration, begun 1 week later.
[2365] 50% with papillomas; avg. 0.93/mouse.
[2366] Semi-weekly application of 20% 4-methylphenol in benzene for duration, begun 1 week later.
[2367] 35% with papillomas; avg. 0.55/mouse.
[2368] 102 semi-weekly applications of 25 μl. 5% phenol in benzene, begun 1 week later.
[2369] Approx. 45% with papillomas at 36 weeks; avg. 0.8/mouse. Approx. 12.5% with carcinomas at 52 weeks.
[2370] 102 semi-weekly applications of 10% phenol, begun 1 week later.
[2371] Approx. 95% with papillomas at 36 weeks, avg. 2.4/mouse. 47% with carcinomas at 52 weeks.
[2372] 102 semi-weekly applications of 25 μl. 0.5% croton oil in benzene, begun 1 week later.
[2373] Approx. 80% with papillomas at 36 weeks; avg. 3.3/mouse. 76% with carcinomas at 52 weeks.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
Boutwell, R. K., and Bosch, D. K., 1959.	25 mice	Sutter	F	25 μl. of 0.3% soln. in acetone once	Skin	0	25 at 18 wks	18 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	25 mice	Sutter	F	25 μl. of 0.3% soln. in acetone once.[2374]	Skin	Tumors[2375]	21 at 18 wks	18 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	20 mice	Sutter	F	25 μl. of 0.3% soln. in acetone once.[2376]	Skin	Tumors[2377]	19 at 18 wks	18 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	20 mice	Sutter	F	25 μl. of 0.3% soln. in acetone once.[2378]	Skin	0	100%	18 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	20 mice	Sutter	F	25 μl. of 0.3% soln. in acetone once.[2379]	Skin	0	100%	18 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	20 mice	Sutter	F	25 μl. of 0.3% soln. in acetone once.[2380]	Skin	Tumors[2381]	19 at 18 wks	18 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	20 mice	Sutter	F	25 μl. of 0.3% soln. in acetone once.[2382]	Skin	Tumors[2383]	19 at 18 wks	18 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	17 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once	Skin	0	16 at 18 wks	18 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	31 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2349]	Skin	Tumors[2384]	28 at 18 wks	48 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	30 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2385]	Skin	Tumors[2386]	21 at 18 wks	48 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	29 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2387]	Skin	0	26 at 15 wks	15 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	35 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once[2388]	Skin	Tumors[2389]	29 at 15 wks	15 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	34 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2390]	Skin	0	33 at 15 wks	15 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	33 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2391]	Skin	0	28 at 15 wks	15 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	23 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once	Skin	0	20 at 21 wks	21 wks.

[2349] Semi-weekly application of 0.5% croton oil in benzene for duration, begun 1 week later.

[2374] Semi-weekly application of 0.5% croton oil in acetone for duration, begun 1 week later.

[2375] 52% with papillomas, avg. 1.05/mouse.

[2376] Semi-weekly application of 3.0% 1,4-naphthoquinone in acetone for duration begun 1 week later.

[2377] 10% with papillomas; avg. 0.11/mouse.

[2378] Semi-weekly application of 3.0% 2-methyl-1,4-naphthoquinone in acetone for duration, begun 1 week later.

[2379] Semi-weekly application of 20% bromobenzene in acetone for duration, begun 1 week later.

[2380] Semi-weekly application of 20% 4-bromophenol in acetone for duration, begun 1 week later.

[2381] 63% with papillomas; avg. 1.26/mouse.

[2382] Semi-weekly application of 100% styrene for duration, begun 1 week later.

[2383] 16% with papillomas; avg. 0.19/mouse.

[2384] 61% with papillomas; avg. 1.93/mouse. 11% with carcinomas at 48 weeks.

[2385] Semi-weekly application of 5.0% croton oil in mineral oil for duration, begun 1 week later.

[2386] 57% with papillomas; avg. 2.14/mouse. 24% with carcinomas at 48 weeks.

[2387] Semi-weekly application of 20% 2,4,6-trichlorophenol in benzene for duration begun 1 week later.

[2388] Semi-weekly application of 20% pentachlorophenol in benzene for duration, begun 1 week later.

[2389] 4% with papillomas; avg. 0.04/mouse.

[2390] Semi-weekly application of 20% 3-tert-butyl-4-hydroxyanisole in benzene for duration, begun 1 week later.

[2391] Semi-weekly application of 20% 3,5 di-tert-butyl-4-hydroxytoluene in benzene for duration, begun 1 week later.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMENTHYL-1,2-BENZANTHRACENE (Continued)								
Boutwell, R. K., and Bosch, D. K., 1959.	24 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2392]	Skin	Tumors[2393]	22 at 21 wks	21 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	24 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2394]	Skin	0	21 at 21 wks	21 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	24 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2395]	Skin	Tumors[2396]	21 at 21 wks	34 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	23 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2397]	Skin	Tumors[2398]	20 at 21 wks	21 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	23 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2399]	Skin	Tumors[2400]	20 at 21 wks	21 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	23 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2401]	Skin	Tumors[2402]	19 at 21 wks	34 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	23 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2403]	Skin	Tumors[2404]	23 at 21 wks	34 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	24 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2405]	Skin	0	23 at 21 wks	21 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	19 mice	Albino, Sutter	F	75 μg. in 25 μl. of benzene once[2406]	Skin	0		20 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	23 mice	Albino, Sutter	M	75 μg. in 0.3% soln. in benzene once	Skin	Tumors[2407]	21 at 24 wks	42 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	23 mice	Albino, Sutter	F	75 μg. in 0.3% soln. in benzene once.[2408]	Skin	Tumors[2409]	22 at 20 wks	42 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	20 mice	Sutter	F	25 μl. of 0.1% soln. in acetone once.[2410]	Skin	Tumors[2411]	19 at 14 wks	14 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	20 mice	Sutter	F	25 μl. of 0.1% soln. in acetone once.[2412]	Skin	0	19 at 14 wks	14 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	20 mice	C3H	F	75 μg. once followed 1 wk. later by twice wkly. applications of 1 drop 10% phenol.	Skin	Tumors[2413, 2414].		1 yr.

[2392] Semi-weekly application of 2% croton oil in benzene for duration, begun 1 week later.
[2393] 91% with papillomas; avg. 4.00/mouse.
[2394] Semi-weekly application of 20% 2-naphthol in ethanol for duration, begun 1 week later.
[2395] Semi-weekly application of 15% 1,4-naphthoquinone in benzene for duration, begun 1 week later.
[2396] 38% with papillomas; avg. 0.48/mouse. 10% with carcinoma at 34 weeks.
[2397] Semi-weekly application of 20% 2-methyl-1,4-naphthoquinone in benzene for duration, begun 1 week later.
[2398] 15% with papillomas; avg. 0.15/mouse. 5% with carcinoma.
[2399] Semi-weekly application of 20% 2-2′methylenebis (3,4,6-trichlorophenol) in benzene for duration, begun 1 week later.
[2400] 10% with papillomas; avg. 0.10/mouse. 5% with carcinoma.
[2401] Semi-weekly application of 20% 2-hexyl-4-chlorophenol in benzene for duration, begun 1 week later.
[2402] 58% with papillomas; avg. 0.84/mouse. 5% with carcinoma at 34 weeks.
[2403] Semi-weekly application of 20% 2-benzyl-4-chlorophenol in benzene for duration, begun 1 week later.
[2404] 4% with carcinoma at 34 weeks.
[2405] Semi-weekly application of 15% bis (diethylthiocarbamoyl) disulfide in acetone for duration, begun 1 week later.
[2406] Semi-weekly application of 25 μl. of benzene.
[2407] 3 with papillomas at 42 weeks.
[2408] Semi-weekly application of 1 drop 10% phenol in benzene for duration, begun 1 week later.
[2409] 95% with papillomas; avg. 3.01/mouse. 73% with carcinoma at 42 weeks.
[2410] Semi-weekly application of 14.8% 5,6,7,8-tetrahydro-2-naphthol in 30% ethanol in acetone for duration, begun 1 week later.
[2411] 53% with papillomas; avg. 0.79/mouse.
[2412] Semi-weekly application of 16.4% tetralin-p-quinol in 30% ethanol in acetone for duration, begun 1 week later.
[2413] 42% with papillomas at 20 weeks; avg. 0.2/mouse at 24 weeks. 29% with carcinomas at 52 weeks.
[2414] Phenol controls negative.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
Boutwell, R. K., and Bosch, D. K., 1959.	30 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2415]	Skin	Tumors[2416]	11 at 18 wks	25 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	32 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2417]	Skin	Tumors[2418]	31 at 18 wks	28 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	24 mice	Sutter	F	25 μl. of 0.3% soln. in acetone once.[2419]	Skin	Tumors[2420]	21 at 12 wks	12 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	36 mice	Sutter	F	25 μl. of 0.3% soln. in acetone once.[2421]	Skin	0	100%	12 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	36 mice	Sutter	F	25 μl. of 0.3% soln. in acetone once.[2422]	Skin	3% with paps.	33 at 12 wks	12 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	36 mice	Sutter	F	25 μl. of 0.3% soln. in acetone once.[2423]	Skin	6% with paps.	100%	12 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	36 mice	Sutter	F	25 μl. of 0.3% soln. in acetone once.[2424]	Skin	Tumors[2425]	34 at 12 wks	12 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	36 mice	Sutter	F	25 μl. of 0.3% soln. in acetone once.[2426]	Skin	3% with paps.	33 at 12 wks	12 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	24 mice	Sutter	F	25 μl. of 0.3% soln. in acetone once.[2427]	Skin	0	100%	12 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	12 mice	Sutter	F	25 μl. of 0.3% soln. in acetone once	Skin	0	100%	12 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	24 mice	Sutter	F	25 μl. of 0.3% soln. in acetone once.[2428]	Skin	0	20 at 12 wks	12 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	27 mice	Sutter	F	25 μl. of 0.3% soln. in acetone once.[2429]	Skin	Tumors[2430]	22 at 12 wks	12 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	20 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2431]	Skin	Tumors[2432]	100%	12 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	20 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2433]	Skin	Tumors[2434]	100%	12 wks.

[2415] Semi-weekly application of 20% 4-fluorophenol in benzene for duration, begun 1 week later.
[2416] 91% with papillomas; avg. 2.64/mouse. 36% with carcinomas at 25 weeks.
[2417] Semi-weekly application of 20% 4-iodophenol in benzene for duration, begun 1 week later.
[2418] 35% with papillomas; avg. 0.47/mouse. 6% with carcinomas at 28 weeks.
[2419] Semi-weekly application of 20% phenol in acetone for duration, begun 1 week later.
[2420] 58% with papillomas, 5% with carcinomas.
[2421] Semi-weekly application of 20% 2,4-dinitrophenol in acetone for duration, begun 1 week later.
[2422] Semi-weekly application of 20% 2,4,6-tribromophenol in acetone for duration, begun 1 week later.
[2423] Semi-weekly application of 20% phenylacetate in acetone for duration, begun 1 week later.
[2424] Semi-weekly application of 20% methylphenylether in acetone for duration, begun 1 week later.
[2425] 9% with papillomas, 3% with carcinomas.
[2426] Semi-weekly application of 20% 2-naphthol in acetone for duration, begun 1 week later.
[2427] Semi-weekly application of 20% 1,4-dihydroxybenzene in acetone for duration, begun 1 week later.
[2428] Semi-weekly application of 20% fluorobenzene in benzene for duration, begun 1 week later.
[2429] Semi-weekly application of 20% phenol in benzene for duration, begun 1 week later.
[2430] 64% with papillomas; avg. 1.50/mouse.
[2431] Semi-weekly application of 13% 2-ethylphenol in benzene for duration, begun 1 week later.
[2432] 55% with papillomas; avg. 0.60/mouse.
[2433] Semi-weekly application of 14% 2-allylphenol in benzene for duration, begun 1 week later.
[2434] 55% with papillomas; avg. 0.75/mouse.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
Boutwell, R. K., and Bosch, D. K., 1959.	20 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2435]	Skin	Tumors[2435]	100%	12 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	20 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2437]	Skin	Tumors[2438]	19 at 12 wks	12 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	19 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2439]	Skin	Tumors[2440]	16 at 12 wks	12 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	20 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2441]	Skin	Tumors[2442]	19 at 12 wks	12 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	20 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2443]	Skin	Tumors[2444]	19 at 12 wks	12 wks.
Boutwell, R. K., and Bosch D. K., 1959.	20 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2445]	Skin	Tumors[2445]	19 at 12 wks	12 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	20 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2447]	Skin	Tumors[2448]	19 at 12 wks	12 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	20 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2449]	Skin	Tumors[2450]	18 at 12 wks	12 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	20 mice	Sutter	F	25 μl. of 0.3% soln. in acetone once	Skin	0	18 at 16 wks	16 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	20 mice	Sutter	F	25 μl. of 0.3% soln. in acetone once.[2451]	Skin	Tumors[2452]	19 at 16 wks	30 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	20 mice	Sutter	F	25 μl. of 0.3% soln. in acetone once.[2453]	Skin	0	100%	12 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	19 mice	Sutter	F	25 μl. of 0.3% soln. in acetone once.[2454]	Skin	Tumors[2455]	17 at 12 wks	12 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	20 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2455]	Skin	Tumors[2457]	15 at 12 wks	12 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	18 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2458]	Skin	0	14 at 12 wks	12 wks.

[2435] Semi-weekly application of 19% 2,6-diallylphenol in benzene for duration, begun 1 week later.
[2436] 25% with papillomas; avg. 0.35/mouse.
[2437] Semi-weekly application of 14% 2-propenylphenol in benzene for duration, begun 1 week later.
[2438] 26% with papillomas; avg. 0.37/mouse.
[2439] Semi-weekly application of 16% 2-isopropyl-4-methylphenol in benzene for duration, begun 1 week later.
[2440] 19% with papillomas; avg. 0.19/mouse. 6% with carcinoma.
[2441] Semi-weekly application of 16% 2-crotenylphenol in benzene for duration, begun 1 week later.
[2442] 26% with papillomas; avg. 0.47/mouse.
[2443] Semi-weekly application of 16% 2-n-butylphenol in benzene for duration, begun 1 week later.
[2444] 58% with papillomas; avg. 1.26/mouse.
[2445] Semi-weekly application of 17% 2-sec-amylphenol in benzene for duration, begun 1 week later.
[2445] 42% with papillomas; avg. 0.79/mouse.
[2447] Semi-weekly application of 16% 4-n-butylphenol in benzene for duration, begun 1 week later.
[2448] 16% with papillomas; avg. 0.21/mouse.
[2449] Semi-weekly application of 17% 4-n-amylphenol in benzene for duration, begun 1 week later.
[2450] 11% with papillomas; avg. 0.22/mouse.
[2451] Semi-weekly application of 10% phenol in acetone for duration, begun 1 week later.
[2452] 32% with papillomas; avg. 0.63/mouse. 5% with carcinoma at 30 weeks.
[2453] Semi-weekly application of 10% 4,4-dihydroxybiphenyl in ethanol for duration, begun 1 week later.
[2454] Semi-weekly application of 16% 4-tert-butylphenol in acetone for duration, begun 1 week later.
[2455] 6% with papillomas; avg. 0.06/mouse.
[2456] Semi-weekly application of 17% 4-sec-amylphenol in benzene for duration, begun 1 week later.
[2457] 40% with papillomas; avg. 0.73/mouse.
[2458] Semi-weekly application of 17% 4-tert-amylphenol in benzene for duration, begun 1 week later.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
Boutwell, R. K., and Bosch, D. K., 1959.	20 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2469]	Skin	Tumors[2460]	18 at 12 wks	12 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	20 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.	Skin	0	18 at 20 wks	20 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	24 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2461]	Skin	0	17 at 21 wks	21 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	23 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2462]	Skin	0	17 at 21 wks	21 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	32 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.	Skin	Tumors[2463]	27 at 24 wks	24 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	33 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2464]	Skin	Tumors[2466]	27 at 24 wks	40 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	33 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2466]	Skin	Tumors[2467]	15 at 24 wks	39 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	33 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2468]	Skin	Tumors[2469]	10 at 24 wks	38 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	19 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2470]	Skin	Tumors[2471]	13 at 20 wks	20 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	20 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2466]	Skin	Tumors[2472]	12 at 20 wks	20 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	20 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2473]	Skin	Tumors[2474]	17 at 20 wks	20 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	20 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2476]	Skin	Tumors[2476]	14 at 20 wks	20 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	20 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2477]	Skin	0	17 at 20 wks	20 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	20 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2478]	Skin	Tumors[2479]	13 at 20 wks	20 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	20 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2480]	Skin	0	16 at 16 wks	16 wks.

[2459] Semi-weekly application of 22% 4(1,1,3,3-tetramethylbutyl) phenol in benzene for duration, begun 1 week later.
[2460] 11% with papillomas; avg. 0.28/mouse.
[2461] Semi-weekly application of 20% dodecylbenzene in benzene for duration, begun 1 week later.
[2462] Semi-weekly application of 20% squalene in benzene for duration, begun 1 week later.
[2463] 11% with papillomas; avg. 0.15/mouse.
[2464] Semi-weekly application of 5% phenol in benzene for duration, begun 1 week later.
[2465] 74% with papillomas; avg. 1.67/mouse. 26% with carcinoma at 40 weeks.
[2466] Semi-weekly application of 10% phenol in benzene for duration, begun 1 week later.
[2467] 100% with papillomas; avg. 3.94/mouse. 93% with carcinomas at 39 weeks.
[2468] Semi-weekly application of 20% phenol in benzene for duration, begun 1 week later.
[2469] 100% with papillomas; avg. 3.20/mouse. 70% with carcinoma at 38 weeks.
[2470] Semi-weekly application of 5% phenol in benzene for duration, begun 1 week later.
[2471] 31% with papillomas, avg. 0.46/mouse.
[2472] 83% with papillomas; avg. 2.08/mouse. 8% with carcinoma.
[2473] Semi-weekly application of 5.7% 3-methylphenol in benzene for duration, begun 1 week later.
[2474] 24% with papillomas; avg. 0.24/mouse.
[2476] Semi-weekly application of 5.7% 4-methylphenol in benzene for duration, begun 1 week later.
[2476] 29% with papillomas; avg. 0.36/mouse.
[2477] Semi-weekly application of 7.9% 5,6,7,8-tetrahydro-2-naphthol in benzene for duration, begun 1 week later.
[2478] Semi-weekly application of 20% 4-chlorothiophenol in benzene for duration, begun 1 week later.
[2479] 15% with papillomas; avg. 0.23/mouse.
[2480] Semi-weekly application of 20% biphenyl in benzene for duration, begun 1 week later.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
Boutwell, R. K., and Bosch, D. K., 1959.	20 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2481]	Skin	Tumors[2482]	17 at 20 wks	20 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	20 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2483]	Skin	Tumors[2484]	18 at 20 wks	20 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	20 mice	Sutter	F	25 μl. of 0.1% soln. in acetone once.	Skin	0	100%	14 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	20 mice	Sutter	F	25 μl. of 0.1% soln. in acetone once.[2485]	Skin	Tumors[2486]	19 at 14 wks	14 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	Mice	Albino-Sutter	F	75 μg. in 25 μl. of benzene once[2487]	Skin	Tumors[2488]		26 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	Mice	Albino-Sutter	F	75 μg. in 25 μl. of benzene once[2489]	Skin	Tumors[2490]		26 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	20 mice	CAF_1	F	75 μg. once followed 1 wk. later by twice wkly. applications of 1 drop 10% phenol.	Skin	Tumors[2491, 2414]		1 yr.
Boutwell, R. K., and Bosch, D. K., 1959.	30 mice	Albino-Holtzman.	F	75 μg. in 0.3% soln. once	Skin	0	28 at 20 wks	52 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	20 mice	Sutter	F	25 μl. of 0.3% soln. in acetone once.[2492]	Skin	Tumors[2493]	19 at 16 wks	30 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	20 mice	Sutter	F	25 μl. of 0.3% soln. in acetone once.[2494]	Skin	Tumors[2496]	100%	12 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	19 mice	Sutter	F	25 μl. of 0.3% soln. in acetone once.[2496]	Skin	Tumors[2497]	17 at 16 wks	30 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	19 mice	Sutter	F	25 μl. of 0.3% soln. in acetone once.[2498]	Skin	Tumors[2495]	100%	12 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	20 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.	Skin	0	18 at 12 wks	12 wks.
Boutwell, R. K., and Bosch, D. K., 1959.	20 mice	Sutter	F	25 μl. of 0.3% soln. in benzene once.[2466]	Skin	Tumors[2499]	16 at 12 wks	12 wks.

[2414] Phenol controls negative.
[2466] Semi-weekly application of 10% phenol in benzene for duration, begun 1 week later.
[2481] Application each 6 weeks of 2 drops 1.5% 2,3-dichloro-1,4-naphthoquinone in benzene for duration, begun 1 week later.
[2482] 18% with papillomas; avg. 0.18/mouse.
[2483] 6/week applications of 2 drops 100% turpentine for duration, begun 1 week later.
[2484] 17% with papillomas; avg. 0.28/mouse.
[2485] Semi-weekly application of 9.4% phenol in 30% ethanol in acetone for duration, begun 1 week later.
[2486] 16% with papillomas; avg. 0.26/mouse.
[2487] Semi-weekly application of 25 μl. of 5% phenol (U.S.P.) in benzene, begun 1 week later.
[2488] 37% papillomas; avg. 0.88/mouse at 26 weeks.
[2489] Semi-weekly application of 5% purified phenol, begun 1 week later.
[2490] 52% papillomas; avg. 0.90/mouse at 26 weeks.
[2491] 60% with papillomas at 20 weeks; avg. 1.4/mouse at 24 weeks. 21% with carcinomas at 52 weeks.
[2492] Semi-weekly application of 21% 2,4,5-trichlorophenol in acetone for duration, begun 1 week later.
[2493] 42% with papillomas; avg. 0.95/mouse. 5% with carcinomas at 30 weeks.
[2494] Semi-weekly application of 14% 2,3,5-trimethylphenol in acetone for duration, begun 1 week later.
[2495] 5% with papillomas; avg. 0.05/mouse.
[2496] Semi-weekly application of 14% 2-allylphenol in acetone for duration, begun 1 week later.
[2497] 35% with papillomas; avg. 1.24/mouse. 24% with carcinoma at 30 weeks.
[2498] Semi-weekly application of 14% 4-hydroxybenzoic acid in acetone for duration, begun 1 week later.
[2499] 88% with papillomas; avg. 2.62/mouse.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
Boutwell, R. K., and Bosch, D. K., 1959.	20 mice	Sutter	F	25 μl. of 0.3% soln. in acetone once.[2500]	Skin	Tumors[2501]	16 at 16 wks	30 wks.
Boutwell, R. K., et al., 1959	Mice	Sutter		75 μg. once[2502]		Tumors[1820]		
Causey, G., 1959	35 mice	C+, inbred		0.3 mg. in 0.006 ml. trioctanoin thrice at 6 wk. intervals.	Inj., epineurium or inside perineurium of uncrushed nerve.	Tumors[2503]	7 died, 27 at 12 mos.	12 mos.
Causey, G., 1959	Mice	C+, inbred		0.3 mg. in 0.006 ml. trioctanoin thrice at 6 wk. intervals.	Inj. dermis of skin above base of tail.	Tumors[2504]		At least 7 mos.
Causey, G., 1959	35 mice	C+, inbred		0.3 mg. in 0.006 ml. trioctanion thrice at 6 wk. intervals.	Inj., epineurium or inside perineurium of crushed nerve.	Tumors[2505]	3 died, 33 at 12 mos.	12 mos.
Cowen, P. N., 1959	24 mice[2506]	CBA	12 āā	0.2 ml. of 0.15% (w/v) soln. in acetone once.[2507]	Skin	Tumors[2508]		
Cowen, P. N., 1959	26 mice	CBA	13 āā	0.2 ml. of 0.15% (w/v) soln. in acetone once.[2507]	Skin	Tumors[2509]		
Cowen, P. N., 1959	24 mice	101	12 āā	0.2 ml. of 0.15% (w/v) soln. in acetone once.[2510]	Skin	Tumors[2511]	3 died early	
Cowen, P. N., 1959	36 mice	101	18 āā	0.2 ml. of 0.15% (w/v) soln. in once.[2512]	Skin	Tumors[2513]		
Cowen, P. N., 1959	36 mice	101	18 āā	Skin graft from animal treated 3 wks. earlier with 0.2 ml. of 0.15% (w/v) soln. in acetone once.	Skin of back	Tumors[2514]		
Cowen, P. N., 1959	24 mice[2515]	101 & CBA	12 āā	0.2 ml. of 0.15% (w/v) soln. in acetone once.[2516]	Grafted skin	Tumors[2517]		
Cowen, P. N., 1959	32 mice[2518]	101 & CBA	16 āā	0.2 ml. of 0.15% (w/v) soln. in acetone once.[2516]	Grafted skin	Tumors[2519]		

[1820] Papillomas.
[2500] Semi-weekly application of 16% 5,6,7,8-tetrahydro-2-naphthol for duration, begun 1 week later.
[2501] 63% with papillomas; avg. 1.00/mouse. 25% with carcinoma at 30 weeks.
[2502] Semi-weekly application of 25 μl. of 0.5% croton oil in benzene for duration, begun 1 week later.
[2503] 12 with fibrosarcomas; 3 invaded the perineurium.
[2504] Fibrosarcomas at 4–7 months.
[2505] 18 with fibrosarcomas; 15 invaded the perineurium.
[2506] Dermal cross-graft 4 weeks before treatment.
[2507] 18 weekly applications 0.3 ml. of 0.1% (V/V) croton oil in acetone, begun 3 weeks later.
[2508] 3 dermal papillomas on host.
[2509] 5 papillomas.
[2510] Paired dermal cross-graft 4 weeks before 18 weekly applications 0.3 ml. of 0.1% (V/V) croton oil in acetone.
[2511] 278 dermal papillomas on host; 83 papillomas on dermal grafts; 14 papillomas on suture line.
[2512] Dermal cross-graft with 36 untreated mice 3 weeks later. 18 weekly applications 0.3 ml. of 0.1% (V/V) croton oil in acetone begun 4 weeks after cross-graft.
[2513] 170 dermal papillomas on host; 2 papillomas on dermal graft; 11 papillomas on suture line.
[2514] 1 dermal papilloma on host; 33 papillomas on dermal graft; 9 papillomas on suture line.
[2515] Experimental mice received CBA dermal graft (½ of dorsum) 4 weeks before treatment.
[2516] 18 weekly applications 0.3 ml. of 0.1% (V/V) croton oil begun 3 weeks later.
[2517] 47 dermal papillomas on host; 7 papillomas on suture line.
[2518] Experimental mice received CBA dermal graft (total dorsum) 4 weeks before treatment.
[2519] 7 dermal papillomas on host; 1 papilloma on suture line.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
Cowen, P. N., 1959	24 mice[2506]	101	M	0.2 ml. of 0.15% (w/v) soln., in acetone once.[2507]	Skin	Tumors[2520]		
Daoust, R., 1959	100 mice	ST[II] A/Eh	50 F & M	0.05 cc. of 0.50% soln. in benzene[2521]	Skin	Tumors[2522]		70 d.
Daoust, R., 1959	100 mice	ST[II] A/Eh	50 F & M	0.05 cc. of 0.25% soln. in benzene[2521]	Skin	Tumors[2523]		70 d.
Ghadially, F. N., 1959	30 mice		M	1% soln. in equal parts anhydrous lanolin and liq. paraffin once a wk. for 8 wks., thereafter sporadically or till tumor formation.	Skin	Tumors[2524]	Life	At least 8 wks.
Ghadially, F. N., 1959	40 hamsters		M	1% soln. of equal parts anhydrous lanolin & liq. paraffin once a wk. for 9 wks., thereafter sporadically or till tumor formation.	Skin	Tumors[2525]	Life	At least 8 wks.
Gurskii, T., 1959	235 mice	A, Bn, R 111	F	0.015–0.3 ml./g. body wt. as crystalline powder, mixed with India ink.	Inj. into pancreas.	Tumors[2526, 2527]	Animals killed bi-wkly. & mthly., 60 at 4 mos.	1 yr.
Hadler, H. I., et al., 1959	20 mice	Swiss	F	0.1μg. dissolved in 50 μl. of acetone soln. once.[2528]	Skin, 3.5 cm.[2]	Tumors[2529, 2530]	10 at 60 wks	60 wks.
Hadler, H. I., et al., 1959	20 mice	Swiss	F	1 μg. dissolved in 50 μl. of acetone soln. once.[2528]	3.5 cm.[2] of skin	Tumors[2530, 2531]	11 at 60 wks	60 wks.
Hadler, H. I., et al., 1959	20 mice	Swiss	F	1 μg. dissolved in 50 μl. of acetone soln. once.	3.5 cm.[2] of skin	0	17 at 60 wks	60 wks.
Holsti, P., 1959	44 mice	White	22 M & F	0.3% soln. in liq. paraffin once	Skin	0	36 at 31 wks	31 wks.
Holsti, P., 1959	44 mice	White	22 M & F	0.3% soln. in liq. paraffin once[2532]	Skin	Tumors[2533]	29 at 31 wks	31 wks.
Holsti, P., 1959	44 mice	White	22 M & F	0.3% soln. in liq. paraffin once[2534]	Skin	0	29 at 31 wks	31 wks.
Holsti, P., 1959	44 mice	White	22 M & F	0.3% soln. in liq. paraffin once[2535]	Skin	0	25 at 31 wks	31 wks.
Holsti, P., 1959	44 mice	White	22 M & F	0.3% soln. in liq. paraffin once[2536]	Skin	0	25 at 31 wks	31 wks.
Holsti, P., 1959	44 mice	White	22 M & F	0.3% soln. in liq. paraffin once[2532]	Skin	Tumors[2533]	29 at 31 wks	31 wks.
Holsti, P., 1959	44 mice	White	22 M & F	0.3% soln. in liq. paraffin once[2537]	Skin	Tumors[2538]	28 at 31 wks	31 wks.

[2506] Dermal cross-graft 4 weeks before treatment.
[2507] 18 weekly applications 0.3 ml. of 0.1% (V/V) croton oil in acetone, begun 3 weeks later.
[2520] 206 dermal papillomas on host; 64 papillomas on dermal graft; 19 papillomas on suture line.
[2521] Applied during resting phase after third hair growth cycle.
[2522] 100% of survivors with papillomas at 70 days; avg. latent period: females 32 days; males 44 days.
[2523] Of survivors: 90% of females, 55% of males with papillomas; avg. latent period: females 42 days, males 72 days.
[2524] Treatment site papillomas, kerato-acanthomas and carcinomas (1 with nodal and dermal metastasis).
[2525] Treatment site papillomas, kerato-acanthomas and carcinomas. Multiple melanomas; sebaceous adenomas.
[2526] 16 with sarcomas (15 splenic, 1 pancreatic) after 4 months.
[2527] 23 India ink controls negative at 1 year.
[2528] Semi-weekly administration 0.2 ml. 0.5% croton seed fraction in acetone begun 1 week later.
[2529] 4 tumor-bearers with 8 papillomas at 60 weeks.
[2530] 3/40 croton seed fraction controls with 5 papillomas and 1 carcinoma.
[2531] 10 tumor-bearers with 14 papillomas at 60 weeks.
[2532] 186 (6/week) applications of 20% lauric acid in chloroform begun 24 hours later.
[2533] 14 with 30 papillomas at 28 weeks.
[2534] 186 (6/week) applications of chloroform begun 24 hours later.
[2535] 186 (6/week) applications of 20% stearic acid in chloroform begun 24 hours later.
[2536] 186 (6/week) applications of 20% palmitic acid in chloroform begun 24 hours later.
[2537] 186 (6/week) applications of undiluted oleic acid begun 24 hours later.
[2538] 27 with 78 papillomas at 25 weeks.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
Holsti, P., 1959	44 mice	White	22 M & F	0.3% soln. in liq. paraffin once[2539]	Skin	Tumors[2540]	21 at 31 wks	31 wks.
Holsti, P., 1959	30 mice	White	15 M & F	0.3% soln. in liq. paraffin once[2541]	Skin	Tumors[2542]		19 wks.
Holsti, P., 1959	44 mice	White	22 M & F	0.3% soln. in liq. paraffin once[2543]	Skin	Tumors[2544]	16 at 25 wks	25 wks.
Holsti, P., 1959	44 mice	White	22 M & F	0.3% soln. in liq. paraffin once	Skin	0	36 at 31 wks	31 wks.
Holsti, P., 1959	44 mice	Outbred	22 F & M	0.3% soln. in liq. paraffin once[2545]	Skin	Tumors[2545]	43 at 24 wks	24 wks.
Holsti, P., 1959	44 mice	Outbred	22 M & F	0.3% soln. in liq. paraffin once[2547]	Skin	Tumors[2548]	36 at 24 wks	24 wks.
Holsti, P., 1959	44 mice	Outbred	22 M & F	0.3% soln. in liq. paraffin once[2549]	Skin	Tumors[2550]	38 at 24 wks	24 wks.
Holsti, P., 1959	44 mice	White	22 M & F	0.3% soln. in liq. paraffin once[2551]	Skin	Tumors[2552]	38 at 25 wks	25 wks.
Howell, J. S., 1959	22 rats	11 stock, albino, 11 Birmingham.	F	5 drops of 1.6% soln. in olive oil to each ventral & dorsal surface at fortnightly intervals for life.	Skin	Tumors[2553]		About 5 mos.
Howell, J. S., 1959	22 rats	13 Birmingham, 9 stock, albino.	F	5 drops of 0.5% soln. in olive oil to each ventral & dorsal surface at fortnightly intervals for life.	Skin	Tumors[2554]	2 died early	About 7 mos.
Howell, J. S., 1959	8 rats	Birmingham	F	5 drops of 1.6% soln. in olive oil to each ventral & dorsal surface once.	Skin	Tumors[2555]		About 1 yr.
Howell, J. S., 1959	9 rats	Birmingham	F	5 drops of 1.6% soln. in olive oil to each ventral & dorsal surface twice at fortnightly intervals.	Skin	Tumors[2555]		About 9 mos.
Howell, J. S., 1959	10 rats	Birmingham	F	5 drops of 1.6% soln. in olive oil to each ventral & dorsal surface 4 times at fortnightly intervals.	Skin	Tumors[2557]		About 9 mos.
Howell, J. S., 1959	10 rats	Birmingham	F	5 drops of 1.6% soln. in olive oil to each ventral & dorsal surface 6 times at fortnightly intervals.	Skin	Tumors[2558]		About 4 mos.
Maltoni, C., and Prodi, G., 1959.	14 rats[392]		F	0.5 ml. of 1% soln. in olive oil, once	I.P	Tumors[2559]	2 died a few d., after inj.	1 yr.

[392] Age at beginning: 4 months.
[2539] 186 (6/week) applications of 20% oleic acid in chloroform begun 24 hours later.
[2540] 13 with 25 papillomas at 23 weeks.
[2541] Application of undiluted oleic acid begun 30 days later.
[2542] 33% papillomas at 19 weeks.
[2543] 350 (2/day) applications of undiluted oleic acid begun 24 hours later.
[2544] 13 with 16 papillomas at 15 weeks.
[2545] 144 (6/week) applications of Tween 80 begun 24 hours later.
[2546] 35 with 143 dermal tumors at 24 weeks.
[2547] 144 (6/week) applications of oleic acid begun 24 hours later.
[2548] 30 with 13 dermal tumors at 19 weeks.
[2549] 144 (6/week) applications of Span 80 begun 24 hours later.
[2550] 1 dermal tumor at 23 weeks.
[2551] 50 semi-weekly applications of undiluted oleic acid begun 24 hours later.
[2552] 2 with 2 papillomas at 25 weeks.
[2553] 8 Birmingham rats with mammary adenocarcinoma (5 multiple); avg. latent period 4.5 months. 9 stock rats with mammary adenocarcinoma (4 multiple); avg. latent period 5.0 months. Dermal tumors.
[2554] 11 Birmingham rats with mammary adenocarcinoma; avg. latent period 7.3 months. 4 stock rats with mammary adenocarcinoma (1 multiple); avg. latent period 7.2 months. Dermal tumors.
[2555] 6 with mammary adenocarcinoma (2 multiple); avg. latent period 12.0 months. Dermal tumors.
[2555] 7 with mammary adenocarcinoma (2 multiple); avg. latent period 9.1 months. Dermal tumors.
[2557] 7 with mammary adenocarcinoma (4 multiple); avg. latent period 9.1 months. Dermal tumors.
[2558] 6 with mammary adenocarcinoma (4 multiple); avg. latent period 4.3 months. Dermal tumors.
[2559] 1 mithyc epithelioma; 12 with neoplastic pulmonary lesions; 3 with luteomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
Marchant, J., 1959	17 mice		F	1 mg. of 0.5% soln. in olive oil for 3 mos.[2560]	Skin, 16 spots over dorsal & ventral surfaces.	Tumors[2561]	1 died at 2½ mos., mean 9 mos.	14 mos.
Marchant, J., 1959	40 mice	(C57BL x 1F)F_1.	F	1 mg. of 0.5% soln. in olive oil for 1, 2, 3 & 4 mos.	Skin, 16 spots over dorsal & ventral surfaces.	Tumors[2562]	10 sacrificed at 1, 2, 3 & 4 mos.	Up to 4 mos.
Marchant, J., 1959	20 mice[2563]	(C57BL x 1F)F_1.	F	0.2 ml. of 0.5% in olive oil six times at fortnightly intervals.	16 spots on dorsal & ventral skin.	Tumors[2564]	4.0–13.2 mos	
Marchant, J., 1959	17 mice[2566]	(C57BL x 1F)F_1.	F	0.2 ml. of 0.5% in olive oil 6 times at fortnightly intervals.	16 spots on dorsal & ventral skin.	Tumors[2566]	4.7–15.0 mos	15 mos.
Marchant, J., 1959	13 mice[2567]	(C57BL x 1F)F_1.	F	0.2 ml. of 0.5% in olive oil 6 times at fortnightly intervals.	16 spots on dorsal & ventral skin.	Tumors[2568]	7.5–14.5 mos	14.5 mos.
Marchant, J., 1959	85 mice	(C57BL x 1F)F_1.	F	0.2 ml. (1 mg.) of 0.5% soln. in olive oil at fortnightly intervals, up to 6 treatments.	16 spots on dorsal & ventral surfaces of skin.	Tumors[2569, 2670].	10 killed at 1, 2, 3 & 4 mos., 14 at 5 mos., 11 at 6 mos., 14 at 7 mos., & 6 at 8 mos.	Up to 8 mos.
Pietra, G., et al., 1959	25 mice[3076]	Swiss	M & F	30 μg. susp. in 0.015 ml. of 1% aqueous gelatin, once.	S.C., interscapular.	Tumors[3076, 3077].	1 killed at 11 wks., 3 at 13 wks., 4 at 16, 18 & 24 wks.	24 wks.
Pogosiants, E. E., et al., 1959	29 steppe lemmings.	Lagurus Lagurus.		0.5% soln. in benzene for 52 applications, 1–3 mg. total dose.	Skin	Tumors[2571]	19 at 4 mos	At least 4 mos.
Pogosiants, E. E., et al., 1959	16 steppe lemmings.	Lagurus Lagurus.		0.05, 0.1 or 0.2 ml. of 0.5% soln. in peach oil 0.5 mg. total dose.	S.C	Tumors[2572]	12 at 3 mos	At least 3 mos.
Pogosiants, E. E., et al., 1959	16 steppe lemmings.	Lagurus Lagurus.		Total dose 1.0 mg. in peach oil	I.M	Tumors[2573]	11 at 3 mos	At least 3 mos.
Pogosiants, E. E., et al., 1959	37 steppe lemmings.	Lagurus Lagurus.		Total dose 7.5 mg. in peach oil	P.O	Tumors[2574]	28 at 2 mos	At least 2 mos.

[2560] Followed by bilateral parascapular ovarian implant.
[2561] 16 with mammary adenoma and carcinoma (7 multiple).
[2562] 4 ovarian nodules (probable granulosa cell tumors) at 3 and 4 months.
[2563] C57B1x1F ovarian grafts 2–3 weeks before treatment.
[2564] 7 ovarian transplantable granulosa cell tumors; 16 with mammary adenocarcinoma, (9 multiple); 1 dermal squamous cell carcinoma.
[2565] C57B1 ovarian grafts 2–3 weeks before treatment.
[2566] 8 ovarian granulosa cell tumors, 1 ovarian spindle-cell tumor, 6 mammary adenocarcinoma (3 multiple), 7 dermal squamous cell carcinoma.
[2567] 1F ovarian graft 2–3 weeks before treatment.
[2568] 5 ovarian granulosa cell tumors, 9 mammary adenocarcinoma (2 multiple).
[2569] 29 ovarian granulosa cell tumors at 3–8 months. 38 mammary adenocarcinoma (35 multiple) at 5–8 months.
[2570] 5 untreated controls negative.
[2571] 17 (90%) with dermal carcinoma and sarcoma; first at 38 days.
[2572] 6 (50%) with sarcoma; first at 3 months.
[2573] 6 (54.5%) with sarcoma; first at 3 months.
[2574] 8 (28.6%) with extra-gastric sarcoma, first at 2 months.
[3076] Age: under 12 hours.
[3076] 8 (32%) with malignant lymphoma at 11–24 weeks.
[3077] Colloid controls negative.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
Pogosiants, E. E., et al., 1959	19 steppe lemmings.	Lagurus Lagurus.	----------	0.05, 0.1, or 0.2 ml. of 0.5% soln. in peach oil, 0.5 mg. total dose.	Inj. into submaxillary glands.	Tumors[2575]	13 at 3 mos	At least 3 mos.
Roe, F. J. C., et al., 1959	50 mice	101 inbred	M & F	300 μg. as 0.15% soln. in acetone once.	Skin	Tumors[2576]	37 at 40 wks	40 wks.
Roe, F. J. C., et al., 1959	27 mice	S	18 M, 9 F	0.2 ml. of 0.15% soln. in acetone once.[2577]	Skin	Tumors[2578]	11 at 46 wks., 10 at 69 wks.	69 wks.
Roe, F. J. C., 1959	20 mice	101 inbred	10 āā	300 μg. in 0.2 ml. acetone once	Skin	0	100% at 24 wks	Still in progress.
Roe, F. J. C., 1959	27 mice	S	18 M, 9 F	0.2 ml. of 0.15% soln. in acetone once, given 3 wks. after 18-once wkly. skin applications of 0.1 or 0.17% croton oil in acetone.	Skin	Tumors[2579]	23 at 46 wks	46 wks.[2580]
Roe, F. J. C., 1959	27 mice	S	18 M, 9 F	0.2 ml. of 0.15% soln. in acetone once.	Skin	Tumors[2581]	21 at 46 wks., 12 at 69 wks.	69 wks.
Setala, K., et al., 1959	Mice	White	M	0.06 μg. in acetone 6 d./wk. for duration of experiment.	Skin	0	100%	Up to 30 d.
Setala, K., et al., 1959	Mice	White	M	60 μg. in acetone once	Skin	0	100%	Up to 30 d.
Setala, K., et al., 1959	Mice	White	M	60 μg. in acetone 6 d./wk. for duration of experiment.	Skin	0	100%	Up to 30 d.
Shemiakina, T. V., 1959	62 mice	A	M	1 mg. in 0.2 mg. of 0.5% glycerine sus. 9 times at wkly. intervals, total 9 mg.	P.O., stomach tube.	Tumors[2582]	27 died before 9th treatment.	Up to 11 mos.
Shemiakina, T. V., 1959	331 mice	A, C57, CC57, D.	M & F	0.2 ml. of 0.5% soln. in triethylene glycol once wkly., 1–9 applications.	P.O., stomach tube.	Tumors[2583, 2584]	64 at 9 wks., 3 after 1 yr.	Over 1 yr.
Sherwin-Weidenreich, R., et al., 1959.	Mice	Swiss albino	M & F	0.05 ml. of 0.5% soln. in benzene once.[2585]	Skin	Tumors[2586]	141 F & 128 M at 18 d.	3 mos.
Sherwin-Weidenreich, R., et al., 1959.	Mice	Swiss albino	M & F	0.05 ml. of 0.5% soln. in benzene once.[2587]	Skin	Tumors[2588]	186 F & 127 M at 18 d.	3 mos.
Sherwin-Weidenreich, R., et al., 1959.	Mice	Swiss albino	M & F	0.05 ml. of 0.5% soln. of benzene once.[2589]	Skin	Tumors[2590]	165 F & 164 M at 18 d.	3 mos.

[2575] 11 (84.6%) with sarcomas, first at 3 months.
[2576] 4 with 6 papillomas.
[2577] Weekly applications of croton oil in acetone; 0.1% for first 2 weeks, then 0.17%.
[2578] 2 males with 3 papillomas (2 treated area); 3 males with 5 treated area tumors (1 probable malignant). 1 female with 5 papillomas (3 treated area); 3 females with 3 tumors (2 probable malignant).
[2579] 7 males with 23 papillomas (3 treated area), 1 male with non-treated area malignant tumor. 4 females with 8 papillomas (3 treated area), 1 female with probably malignant tumor.
[2580] From start of DMBA.
[2581] 3 males with 9 papillomas (3 treated area). 2 females with 3 non-treated area papillomas.
[2582] 1 forestomach papilloma after 3 doses. 12 with forestomach squamous cell carcinoma (7 with metastases); 15 with multiple forestomach papillomas; after 9 doses.
[2583] 70 with forestomach papillomas (59 with squamous cell carcinoma); 2 gastric sarcomas (7 with metastases).
[2584] 80 triethylene glycol controls with 4 papillomas and 1 forestomach squamous cell carcinoma.
[2585] At beginning of second hair growth cycle.
[2586] 9 females with papillomas (2 squamous cell carcinomas) at 3–10 wks. 7 males with papillomas (1 squamous cell carcinoma) at 3–10 wks.
[2587] During resting phase after 2nd hair growth cycle.
[2588] 145 females with papillomas (33 squamous cell carcinomas) at 3–10 wks. 76 males with papillomas (10 squamous cell carcinomas) at 3–10 wks.
[2589] 5 doses/wk. for 2 wks. of .3–.5 mgm cortisone acetate S.C. when second hair growth cycle due.
[2590] 65 females and 51 males with papillomas; 14 females and 8 males with carcinomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
Sherwin-Weidenreich, R., et al., 1959.	Mice	Swiss albino	M & F	0.05 ml. of 0.5% soln. in benzene once.[2691]	Skin	Tumors[2692]	159 M & 145 F at 18 d.	3 mos.
Shubik, P., et al., 1959	60 rats	Swiss	30 M & F	20 μg. in acetone once[2693]	Skin	Tumors[2694]	31 F, 23 M at 40 wks.	40 wks.
Shubik, P., et al., 1959	60 rats	Swiss	30 F & M	1% in mineral oil once[2693]	Skin	Tumors[2695]	20 F, 18 M at 40 wks.	50 wks.
Shubik, P., et al., 1959	60 mice	Swiss	30 F & M	20 μg. in acetone once[2696]	Skin	Tumors[2597]	20 F, 18 M at 40 wks.	45 wks.
Shubik, P., et al., 1959	60 mice	Swiss	30 F & M	1.0% in mineral oil once[2596]	Skin	Tumors[2598]	22 F, 11 M at 40 wks.	55 wks.
Simpson, M. E., and Evans, E. S., 1959.	15 rats	Long-Evans	F	2 mg. dissolved in 0.25 cc tri-octanoin, fed ad lib.	I.M	Tumors[2599]		180 d.
Simpson, M. E., and Evans, E. S., 1959.	15 rats[2600]	Long-Evans	F	2 mg. dissolved in 0.25 cc tri-octanoin, fed ad lib.	I.M	Tumors[2601]		
Simpson, M. E., and Evans, E. S., 1959.	13 rats	Long-Evans	F	2 mg. dissolved in 0.25 cc tri-octanoin, fed 6 g. food/d.	I.M	Tumors[2602]		180 d.
Simpson, M. E., and Evans, E. S., 1959.	Rats[2603]	Long-Evans	F	2 mg. dissolved in 0.25 cc tri-octanoin, fed 6 g. food/d.	I.M	Tumors[2604]		180 d.
Vasiliev, J. M., 1959	110 rats	White	M	10% in 20 mg. paraffin wax pellet, 2 pellets.	L. & r. flank S.C. implant.	Tumors[2605, 2606].	Killed between 30–120 d.	150 d.
Cherry, C. P., and Glucksmann, A., 1960.	28 rats	Black-hooded	F	1% soln. in acetone once wkly. for 28 wks., twice wkly. for 27 wks.	Intravaginally	Tumors[2607]	23 at 150 d	
Cherry, C. P., and Glucksmann, A., 1960.	24 rats[2608]	Black-hooded	F	1% soln. in acetone once wkly	Intravaginally	Tumors[2609]	23 at 150 d	
Cherry, C. P., and Glucksmann, A., 1960.	31 rats[2610]	Black-hooded	F	1% soln. in acetone once wkly[2611]	Intravaginally	Tumors[2612]	28 at 150 d	
Cherry, C. P., and Glucksmann, A., 1960.	16 rats[2613]	Black-hooded	F	1% soln. in acetone once wkly	Intravaginally	Tumors[2614]	8 at 150 d	

[2591] 5 doses/wk. for 2 wks. of .3–.5 mgm cortisone acetate resting phase after 2nd hair growth cycle.
[2692] 108 females and 38 males with papilloma; 24 females and 8 males with carcinoma.
[2593] Semiweekly applications of 60 mg. undiluted Tween 60, begun after treatment.
[2594] 8 females with epithelial tumors, avg. latent period 24.1 wks. 8 males with 11 epithelial tumors, (1 carcinoma), avg. latent period 26.9 wks.
[2595] 13 females with 24 epithelial tumors (6 carcinomas), avg. latent period 37.3 wks. 10 males with 18 epithelial tumors (4 carcinomas), avg. latent period 19.0 weeks.
[2596] 6/wk. applications of 60 mg. undiluted Tween 60 after treatment begun.
[2597] 12 females with 27 epithelial tumors, (4 carcinomas), avg. latent period 27.7 wks. 20 males with 83 epithelial tumors, (5 carcinomas), avg. latent period 27.6 weeks.
[2598] 14 females with 33 epithelial tumors (3 carcinomas); avg. latent period 36.2 wks. 18 males with 51 epithelial tumors (6 carcinomas); avg. latent period 31.9 wks.
[2599] 14 (93%) with fibrosarcomas at 118–181 days.
[2600] Hypophysectomized 28 days before treatment.
[2601] 15 (100%) with fibrosarcomas at 118 and 181 days.
[2602] 12 (92%) with fibrosarcomas at 146–180 days.
[2603] Hypophysectomized after first tumor formation.
[2604] Fibrosarcomas.
[2605] S.C. spindle cell and polymorphic cell sarcomas at 112 through 150 days.
[2606] Paraffin pellet controls negative at 15 days.
[2607] 16 with vaginal tumors (16 sarcomas, 1 carcinoma, 1 papilloma). 15 vulval carcinomas, 6 vulval papillomas.
[2608] Pregnant.
[2609] 20 with vaginal tumors (18 sarcomas, 2 presarcomas, 3 papillomas). 5 vulval carcinomas and 10 vulval papillomas.
[2610] Ovariectomized at 2–3 mos. age.
[2611] Semiweekly I.M. administration of 1 mg. progesterone.
[2612] 13 with vaginal tumors (12 sarcomas, 1 presarcoma, 2 carcinomas, 5 papillomas.
[2613] Adrenalectomized and castrated.
[2614] 8 with vaginal tumors (6 sarcomas, 12 carcinomas, 1 papilloma). 3 vulval carcinomas and 2 vulval papillomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
Cherry, C. P., and Glucksmann, A., 1960.	21 rats	Black-hooded	F	1% soln. in acetone once wkly	Skin	Tumors[2615]	21 at 150 d	
Cherry, C. P., and Glucksmann, A., 1960.	16 rats[198]	Black-hooded	F	1% soln. in acetone twice wkly[2616]	Intravaginally	Tumors[2617]	16 at 150 d	
Cherry, C. P., and Glucksmann, A., 1960.	16 rats[2610]	Black-hooded	F	1% soln. in acetone twice wkly	Intravaginally	Tumors[2618]	15 at 150 d	
Cruickshank, A. H., and Summers, M. M., 1960.	6 rabbits[2619]	Mixed	M & F	0.5% biwkly. applications for 11 wks.	Skin, ears	Tumors[2620]		
Cruickshank, A. H., and Summers, M. M., 1960.	6 rabbits[2619]	Mixed	M & F	0.5% biwkly. applications for 8 wks.	Skin, ears	Tumors[2621]		8 wks.
Cruickshank, A. H., and Summers, M. M., 1960.	6 rabbits[2619]	Mixed	M & F	0.5% biwkly. applications for 17 wks.	Skin, ears	Tumors[2622]		17 wks.
Della Porta, G., et al., 1960	58 mice	Swiss albino	28 F, 30 M	20 μg. in acetone once[2623]	Skin	Tumors[2624]	25 F & 25 M at 15 wks.; 7 F & 5 M at 60 wks.	70 wks.
Della Porta, G., et al., 1960	92 mice	Swiss albino	60 F, 32 M	20 μg. in 50 μl. in acetone once	Skin	Tumors[2625]	32 at 70 wks	80 wks.
Della Porta G., et al., 1960	60 mice	Swiss albino	30 F & M	20 μg. in acetone once[2626]	Skin	Tumors[2627]	18 F, 24 M sacrificed at 21 wks.	21 wks.
Della Porta, G., et al., 1960	60 mice	Swiss albino	30 āā	20 μg. in acetone once[2628]	Skin	Tumors[2629]	48 died by 60th wk.	At least 60 wks.
Della Porta, G., et al., 1960	32 mice	Swiss albino	F	100 μg. in 50 μl. acetone once	Skin	Tumors[2630]	24 at 50 wks. & 3 at 90 wks.	90 wks.
Della Porta, G., et al., 1960	40 mice	Swiss albino	20 āā	50 μg. in acetone once[2631]	Skin	Tumors[2632]	5 F & 1 M at 60 wks.	60 wks.
Della Porta, G., et al., 1960	60 mice	Swiss albino	30 āā	25 μl. (250 μg) of 1% in mineral oil once.[2628]	Skin	Tumors[2633]	46 died by 60th wk.	At least 60 wks.
Della Porta, G., et al., 1960	60 mice	Swiss albino	30 āā	25 μl. (250 μg) of 1% in mineral oil once.[2634]	Skin	Tumors[2635]	46 died by 60th wk.	80 wks.

[198] Castrated.
[2610] Ovariectomized at 2–3 mos. age.
[2615] 9 with vaginal tumors (7 sarcomas, 2 fibromas, 16 carcinomas, 4 papillomas1 vulval.) sarcoma.
[2616] Semiweekly I.M. administration of 1 μg. estradiol monobenzoate in olive oil.
[2617] 8 with vaginal tumors (5 sarcomas, 3 presarcomas), 9 carcinomas. 4 vulval papillomas.
[2618] 3 vaginal sarcomas, 11 vulval carcinomas, 1 vulval papilloma.
[2619] Sympathectomized.
[2620] 47 papillomas on sympathectomized ear. 33 papillomas on normal ear.
[2621] 14 papillomas on sympathectomized ear. 20 papillomas on normal ear.
[2622] 40 papillomas on sympathectomized ear. 48 papillomas on normal ear.
[2623] Daily applications (5–6/wk. for 70 wks.) of 60 mg. Tween 60 begun 15 weeks later.
[2624] 16 females with 96 dermal tumors. (1 square cell carcinoma); 80 regressed. Avg. latent period 15.29 wks. 19 males with 93 benign dermal tumors (79 regressed). Avg. latent period 11.93 wks.
[2625] 2 females with 2 dermal tumors (1 squamous cell carcinoma, 1 papilloma). 2 males with 2 dermal tumors (1 fibrosarcoma, 1 treated area papilloma).
[2626] Daily applications (5–6/wk. for 20 wks.) of 60 mg. Tween 60 begun 1 week later.
[2627] 18 females and 24 males with tumors (predominantly benign); a histopathologica study.
[2628] Daily applications (5–6/wk. for 60–82 wks.) of 60 mg. Tween 60 begun 1 week later.
[2629] 22 females with 159 benign dermal tumors, 9 squamous cell carcinomas, 1 fibrosarcoma, 1 malignant dermal tumor. 27 males with 365 benign dermal tumors, 11 squamous cell carcinomas.
[2630] 3 with 3 skin tumors (1 otic basal cell carcinoma, 2 otic papillomas).
[2631] Daily applications (5–6/wk. for 50 wks.) of 60 mg. Tween 60 begun 1 week later.
[2632] 15 females with 72 benign dermal tumors (58 regressed), 1 squamous cell carcinoma. 14 males with 113 benign dermal tumors (85 regressed), 1 squamous cell carcinoma, 2 basal cell carcinomas.
[2633] 23 females with 163 benign dermal tumors, 8 squamous cell carcinomas. 24 males with 289 benign dermal tumors, 8 squamous cell carcinomas.
[2634] 150–180 semiweekly applications of 60 mg. Tween 60 begun 1 week later.
[2636] 20 females with 81 benign tumors, 6 squamous cell carcinomas, 3 basal cell carcinomas, 1 fibrosarcoma. 23 males with 112 benign dermal tumors, 4 squamous cell carcinomas, 1 malignant dermal tumor.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
Della Porta, G., et al., 1960	30 mice	Swiss albino	F	25 μl. (250 μg). of 1% in mineral oil once.[2636]	Skin	Tumors[2637]	24 at 51 wks	51 wks.
Della Porta, G., et al., 1960	22 mice	Swiss albino	F	50 μg. in 50 μl. of acetone once	Skin	Tumors[2638]	21 at 50 wks., 8 at 90 wks.	90 wks.
Della Porta, G., et al., 1960	40 mice	Swiss albino	20 āā	100 μg. in acetone once[2631]	Skin	Tumors[2639]	7 F & 4 M at 60 wks.	60 wks.
Della Porta, G., et al., 1960	60 mice	Swiss albino	30 āā	20 μg. in acetone once[2634]	Skin	Tumors[2640]	24 died by 60th wk	80 wks.
Della Porta, G., et al., 1960	60 mice[2642]	Swiss albino	30 F, 30 M	20 μg. in acetone once[2641]	Skin	Tumors[2643]	44 died by 50th wk	61 wks.
Della Porta, G., et al., 1960	47 mice	Swiss albino	22 F, 25 M	20 μg. in acetone once[2644]	Skin	Tumors[2646]	20 F & 20 M at 25 wks.; 4 F & 1 M at 60 wks.	70 wks.
Gasic, G., et al., 1960	20 mice	C3H	M & F	Whole or strips of placenta containing crystals of DMBA.	Homologous S.C. transplant.	Tumors[2646]		6 mos.
Ghadially, F. N., 1960	6 hedge-hogs			2% soln. of equal parts lanolin & paraffin for 30 applications in 11 mos.	Skin	Tumors[2647]	4 died in 3–6 mos., 1 died at 11 mos., 1 killed at 13 mos.	13 mos.
Ghadially, F. N., 1960	23 rabbits	Variety		2% soln. in equal parts lanolin & paraffin once wkly.	Skin	Tumors[2648]		
Ghadially, F. N., 1960	2 hedge-hogs			Unspecified amt. wkly. for 11 mos	Skin	Tumors[2649]		At least 11 mos.
Ghadially, F. N., et al., 1960	Hamsters	Brown & white		0.2% soln. in acetone once wkly. for 25 wks.	Skin	Tumors[2650]		More than 25 wks.
Holsti, P., 1960	50 mice	White	30 M, 20 F	0.3% soln. in liq. paraffin once	Skin	0	41 at 24 wks	24 wks.
Holsti, P., 1960	50 mice	White	30 M, 20 F	0.3% soln. in liq. paraffin once[2651]	Skin	Tumors[2652, 2653]	32 at 24 wks	24 wks.
Holsti, P., 1960	50 mice	White	30 M, 20 F	0.3% soln. in liq. paraffin once[2654]	Skin	Tumors[2655, 2656]	35 at 24 wks	24 wks.

[2631] Daily applications (5–6/wk. for 50 wks.) of 60 mg. Tween 60 begun 1 week later.
[2634] 150–180 semiweekly applications of 60 mg. Tween 60 begun 1 week later.
[2636] 100 semiweekly applications of 30 mg. Tween 60 begun 1 wk. later.
[2637] 13 with 39 benign dermal tumors, (27 regressed). 1 fibrosarcoma.
[2638] 2 with 2 dermal tumors: 1 basal cell carcinoma, 1 abdominal acanthoma.
[2639] 16 females with 110 benign dermal tumors (81 regressed), 4 squamous cell carcinomas 1 basal cell carcinoma, 2 dermal fibrosarcomas, 1 malignant dermal tumor.
[2640] 20 females with 76 benign dermal tumors, 6 squamous cell carcinomas, 1 basal cell carcinoma. 19 males with 101 benign dermal tumors, 4 squamous cell carcinomas, 1 basal cell carcinoma.
[2641] Daily applications (5–6/wk. for 50 wks.) of 60 mg. Tween 60 begun 1 wk. later.
[2642] Individually caged.
[2643] 14 females with 65 benign dermal tumors, 2 squamous cell carcinomas. 22 males with 132 benign dermal tumors, 2 squamous cell carcinomas.
[2644] Daily applications (5–6 wk. for 70 wks.) of 60 mg. Tween 60 begun 25 weeks later.
[2645] 9 females with 37 dermal tumors, 1 squamous cell carcinoma (25 regressed), avg. latent period 15.81 wks. 7 males with 17 benign dermal tumors (10 regressed), avg. latent period 9–64 wks.
[2646] 17 with invasive, transplantable tumors (12 malignant); tissue of origin uncertain.
[2647] 1 killed at 13 mos. with keratoacanthomas, 1 papilloma and 1 dermal carcinoma (lymph node metastases).
[2648] 19 dermal tumors (squamous cell carcinoma, keratoacanthoma, papilloma).
[2649] 1 with benign and carcinomatous dermal tumors (lymph node metastases).
[2650] Melanomas; trauma failed to induce malignancy.
[2651] Twice daily applications of 0.2% croton oil in paraffin begun 18 days later.
[2652] 5 with 7 tumors.
[2653] 50 croton oil controls negative.
[2654] Daily applications of 0.2% croton oil in paraffin begun 18 days later.
[2655] 2 with 3 tumors.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
Holsti, P., 1960	50 mice	White	20 M, 20 F	0.3% soln. in liq. paraffin once[2656]	Skin	Tumors[2653, 2667]	42 at 24 wks	24 wks.
Howell, J. S., 1960	12 rats[2668]	Stock	F	20 drops of 1.6% soln. (20.8 mg.) in olive oil at fortnightly intervals.	Ventral & dorsal skin surfaces.	Tumors[2669]	Avg. 8.8 mos	At least 8.8 mos.
Howell, J. S., 1960	12 rats[2660]	Stock	F	20 drops of 1.6% soln. (20.8 mg.) in olive oil at fortnightly intervals.	Ventral & dorsal skin surfaces.	Tumors[2661]	Avg. 7.5 mos	
Howell, J. S., 1960	18 rats[2662]	Birmingham F & stock M.	9 M, 9 F	20 drops of 1.6% soln. (20.8 mg.) in olive oil given at fortnightly intervals.	Ventral & dorsal skin surfaces.	Tumors[2663]	Avg. 8 mos. F & 8.8 mos. M.	About 6 mos.
Illman, O., and Ghadially, F. N., 1960.	24 hamsters	White	12 M, 12 F	2% soln. in acetone once wkly. for 22 wks.	Skin	Tumors[2664, 2665]	24 at 15 wks., 17 at 31 wks.	31 wks.
Illman, O., and Ghadially, F. N., 1960.	24 hamsters	Cream	12 M, 12 F	2% soln. in acetone once wkly. for 22 wks.	Skin	Tumors[2666, 2666]		31 wks.
Illman, O., and Ghadially, F. N., 1960.	24 hamsters	Brown or Syrian Golden.	12 M, 12 F	2% soln. in acetone once wkly. for 22 wks.	Skin	Tumors[2666, 2667]	19 at 15 wks., 8 at 31 wks.	31 wks.
Klein, M., 1960	Mice	Swiss albino	M	0.2 ml. of 0.00008% soln. in acetone once.[2668]	Skin	Tumors[2669, 2670]	Sacrificed during last 4–6 wks.	Up to 224 d.
Klein, M., 1960	Mice	DBA/$_2$JAX	M	0.05 ml. of 0.15% soln. in acetone once.[2671]	Skin	0	33 alive at time of 1st tumor.	290 d.
Klein, M., 1960	Mice	Swiss albino	M	0.2 ml. of 0.00001% soln. in acetone once.[2673]	Skin	Tumors[2670, 2673]	Sacrificed during last 4–6 wks.	Up to 224 d.
Klein, M., 1960	Mice	DBA/$_2$JAX	M	0.05 ml. of 0.15% soln. in acetone once.[2674]	Skin	Tumors[2676]	35 alive at time of 1st tumor.	219 d.
Mody, J. K., 1960	60 mice	IF	F	1 ml. (8 drops per side) of 0.5% soln. in arachis oil for (4) fortnightly applications.	Skin, dorsal & ventral surfaces.	Tumors[2676]	20 killed up to 15 wks., 34 killed between 16–51 wks.	70 wks.
Riska, E. B., 1960	50 mice	Albino	M	0.003% in 6.25% aqueous soln. of polyoxyethylene sorbitan monostearate thrice wkly. for 52 wks.	Skin	Tumors[2677]	22 at 52 wks	52 wks.

[2653] 50 croton oil controls negative.
[2656] Semiweekly applications of 0.2% croton oil in paraffin begun 18 days later.
[2657] 1 tumor at 16 wks.
[2658] Lactating.
[2659] 1 mammary fibroadenoma, 7 dermal tumors, 4 otic carcinomatous kerato-acanthomas.
[2660] Lactating. Unilateral nipple removed after first litter.
[2661] 3 with mammary tumors: 1 at 11 mos., 2 at 7.75 mos. (1 with 3 adenocarcinomas). 2 dermal tumors. 1 otic squamous cell carcinoma.
[2662] Castrated 4 wks. before treatment.
[2663] 5 males with dermal tumors, 2 otic carcinomatous tumors; 7 females with dermal tumors, 4 otic carcinomatous kerato-acanthomas.
[2664] 16 with 53 melanomas at 31 wks. Kerato-acanthomas and squamous cell carcinomas.
[2665] Untreated controls normal.
[2666] Less than 50% with kerato-acanthomas. 1 carcinoma.
[2667] 8 with 62 melanomas at 31 wks. Kerato-acanthomas and squamous cell carcinomas.
[2668] 25 weekly applications of 1% croton oil in acetone begun 2 wks. later.
[2669] 11 (26%) with dermal tumors, avg. 0.5/mouse.
[2670] 4 (13%) acetone and croton oil controls with dermal tumors.
[2671] 11 monthly applications of 0.05 ml. 100% acetone begun 1 mo. later.
[2672] 25 weekly applications 1% croton oil in acetone begun 2 wks. later.
[2673] 9 (20%) with dermal tumors, avg. 0.3/mouse.
[2674] 50 semiweekly applications 0.05 ml. of 1% croton oil in acetone begun 1 mo. later.
[2675] 27 (77%) with dermal tumors, avg. 2.5/mouse.
[2676] 10 ovarian granulosa cell tumors. 1 luteinized granulosa cell tumor. 1 thecal luteinized granulosa cell tumor.
[2677] 31 with 109 benign tumors at 44 wks., avg. latent period 18 wks. 6 squamous cell carcinomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
Riska, E. B., 1960	50 mice	Albino	M	0.003% in 12.5% aqueous soln. of polyoxyethylene sorbitan monostearate thrice wkly. for 52 wks.	Skin	Tumors[2678]	7 at 52 wks	52 wks.
Riska, E. B., 1960	50 mice	Albino	M	0.003% in 25% aqueous soln. of polyoxyethylene sorbitan monostearate thrice wkly. for 52 wks.	Skin	Tumors[2679]	6 at 52 wks	52 wks.
Riska, E. B., 1960	50 mice	Albino	M	0.003% in 50% aqueous soln. of polyoxyethylene sorbitan monostearate thrice wkly. for 52 wks.	Skin	Tumors[2680]	25 at 52 wks	52 wks.
Riska, E. B., 1960	50 mice	Albino	M	0.003% in 6.25% aqueous soln. of polyoxyethylene sorbitan monolaurate thrice wkly. for 52 wks.	Skin	Tumors[2681]	9 at 52 wks	52 wks.
Riska, E. B., 1960	50 mice	Albino	M	0.003% in 12.5% aqueous soln. of polyoxyethylene sorbitan monolaurate thrice wkly. for 52 wks.	Skin	Tumors[2682]	8 at 52 wks	52 wks.
Riska, E. B., 1960	50 mice	Albino	M	0.003% in 25% aqueous soln. of polyoxyethylene sorbitan monolaurate thrice wkly. for 52 wks.	Skin	Tumors[2683]	3 at 52 wks	52 wks.
Riska, E. B., 1960	50 mice	Albino	M	0.003% in 50% aqueous soln. of polyoxyethylene sorbitan monolaurate thrice wkly. for 52 wks.	Skin	Tumors[2684]	9 at 52 wks	52 wks.
Riska, E. B., 1960	30 mice	Albino	M	0.003% in 6.25% aqueous soln. of polyoxyethylene sorbitan monooleate thrice wkly. for 52 wks.	Skin	Tumors[2686]	13 at 52 wks	52 wks.
Riska, E. B., 1960	30 mice	Albino	M	0.003% in 12.5% aqueous soln. of polyoxyethylene sorbitan monooleate thrice wkly. for 52 wks.	Skin	Tumors[2686]	8 at 52 wks	52 wks.
Riska, E. B., 1960	30 mice	Albino	M	0.003% in 25% aqueous soln. of polyoxyethylene sorbitan monooleate thrice wkly. for 52 wks.	Skin	Tumors[2687]	10 at 52 wks	52 wks.
Riska, E. B., 1960	30 mice	Albino	M	0.003% in 50% aqueous soln. of polyoxyethylene sorbitan monooleate thrice wkly. for 52 wks.	Skin	Tumors[2688]	9 at 52 wks	52 wks.
Roe, F. J. C., and Pierce, W. E. H., 1960.	20 mice	"101"	10 F, 10 M	300 μg. in 0.2 ml. acetone once[2689]	Skin	Tumors[2690]	15 at 36 wks	At least 58 wks.

[2678] 27 with 56 benign tumors at 43 wks., avg. latent period 13 wks. 4 squamous cell carcinomas.
[2679] 33 with 61 benign tumors at 48 wks., avg. latent period 11 wks. 2 squamous cell carcinomas.
[2680] 27 with 79 benign tumors at 52 wks., avg. latent period 19 wks. 1 squamous cell carcinoma.
[2681] 27 with 78 benign tumors at 41 wks., avg. latent period 14 wks. 8 squamous cell carcinomas.
[2682] 36 with 100 benign tumors at 39 wks., avg. latent period 15 wks. 3 squamous cell carcinomas.
[2683] 25 with 58 benign tumors at 45 wks., avg. latent period 9 wks. 4 squamous cell carcinomas.
[2684] 15 with 53 benign tumors at 50 wks., avg. latent period 28 wks.
[2685] 19 with 58 benign tumors at 40 wks., avg. latent period 21 wks. 11 squamous cell carcinomas.
[2686] 18 with 39 benign tumors at 45 wks., avg. latent period 17 wks. 3 squamous cell carcinomas.
[2687] 15 with 40 benign tumors at 51 wks., avg. latent period 24 wks. 2 squamous cell carcinomas.
[2688] 9 with 16 benign tumors at 52 wks., avg. latent period 33 wks.
[2689] Weekly applications of 0.25 ml. lemon oil begun 3 wks. later, continued until 40th wk.
[2690] 10 with 38 papillomas, 2 with squamous cell carcinomas at 36–55 wks.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
Roe, F. J. C., and Pierce, W. E. H., 1960.	20 mice	"101"	10 F, 10 M	300 μg. in 0.15 ml. acetone once[2691]	Skin	Tumors[2692]	15 at 36 wks	At least 40 wks.
Roe, F. J. C., and Pierce, W. E. H., 1960.	20 mice	"101"	10 F, 10 M	300 μg. in 0.15 ml. acetone once[2693]	Skin	Tumors[2694]	10 at 36 wks	At least 40 wks.
Roe, F. J. C., and Pierce, W. E. H., 1960.	30 mice	"101"	15 F, 15 M	300 μg. in 0.15 ml. acetone once	Skin	Tumors[2695]	22 at 36 wks	At least 36 wks.
Roe, F. J. C., and Pierce, W. E. H., 1960.	20 mice	"101"	10 F, 10 M	225 μg. in 0.15 ml. acetone once[2696]	Skin	Tumors[2697]	19 at 15 wks., 14 still alive at 34 wks.	Still in progress after 34 wks.
Roe, F. J. C., and Pierce, W. E. H., 1960.	20 mice	"101"	10 F, 10 M	300 μg. in 0.2 ml. acetone once[2698]	Skin	Tumors[2699]	15 at 36 wks	At least 58 wks.
Roe, F. J. C., and Pierce, W. E. H., 1960.	20 mice	"101"	10 F, 10 M	300 μg. in 0.2 ml. acetone once[2700]	Skin	Tumors[2701]	15 at 36 wks	At least 36 wks.
Roe, F. J. C., and Pierce, W. E. H., 1960.	20 mice	"101"	10 F, 10 M	300 μg. in 0.2 ml. acetone once[2702]	Skin	Tumors[2703]	13 at 36 wks	At least 36 wks.
Roe, F. J. C., and Pierce, W. E. H., 1960.	20 mice	"101"	10 F, 10 M	300 μg. in 0.2 ml. acetone once[2704]	Skin	Tumors[2706]	18 at 36 wks., 2 at 65 wks.	Still under observation after 65 wks.
Roe, F. J. C., and Pierce, W. E. H., 1960.	20 mice	"101"	10 F, 10 M	300 μg. in 0.2 ml. acetone once	Skin	Tumors[2706]	16 at 33 wks	33 wks.
Saffiotti, 1960	25 mice	Swiss	F	5 μg. in 50 μl. acetone, twice wkly.[2707]	Skin	Tumors[2708]	25 at 25 wks., 0 at 30 wks.	30 wks.
Saffiotti, 1960	25 mice	Swiss	F	5 μg. in 50 μl. acetone, twice wkly	Skin	Tumors[2709]	22 at 25 wks., 0 at 30 wks.	30 wks.
Shubik, P., et al., 1960	20 hamsters	Syrian golden	āā	300 μg. as 0.1% soln. in acetone once.[2710]	Skin	Tumors[2711]	Animals died early.	56 wks.
Shubik, P., et al., 1960	10 hamsters	Syrian golden	5 āā	300 μg. once	Skin	Tumors[2712]		70 wks.

[2691] 37 weekly applications of 0.25 ml. 80% orange oil in acetone begun 3 wks. later.
[2692] 10 with 31 papillomas (1 in non-treated area), 1 squamous cell carcinoma, 1 sebaceous cell mammary tumor.
[2693] 37 weekly applications of 0.25 ml. 40% orange oil in acetone begun 3 wks. later.
[2694] 5 with 13 papillomas (1 in non-treated area), 1 progressed to squamous cell carcinoma. 4 urethral orifice papillomas at 13–24 wks. 1 with 2 sebaceous cell mammary tumors.
[2695] 4 with 5 non-treated area papillomas, 1 with 2 and 1 with 3 sebaceous cell mammary tumors.
[2696] Weekly applications of 0.25 ml. lime oil begun 3 wks. later, continued until 34th wk.
[2697] 10 with 22 papillomas, 1 squamous cell carcinoma.
[2698] Weekly applications of 0.25 ml. grapefruit oil begun 3 wks. later, continued until 40th wk.
[2699] 13 with 37 papillomas, 2 with squamous cell carcinomas at 36–55 wks., 1 S.C. spindle cell sarcoma.
[2700] Weekly applications of 0.25 ml. 80% terpene fraction of orange oil in acetone begun 3 wks. later.
[2701] 8 with 29 papillomas, 1 squamous cell carcinoma.
[2702] Weekly applications of 0.25 ml. of 20% non-terpene fraction of orange oil in acetone begun 3 wks. later.
[2703] 1 dermal papilloma, 1 urethral orifice papilloma at 15 wks. 1 perineal fibrosarcoma.
[2704] Weekly applications of 0.25 ml. orange oil begun 3 wks. later, continued until 42nd week.
[2705] 13 with 39 papillomas, 1 S.C. hemangioma (probably malignant) after 7 wks.
[2706] 1 papilloma in non-treated area.
[2707] 0.1% 2-naphthylamine in food for 1 mo. before treatment.
[2708] 22 with 87 dermal tumors (1 lymphosarcoma).
[2709] 22 with 132 dermal tumors.
[2710] 6 drops of 0.5% croton oil in acetone or Tween 60 begun 3 wks. later, continued for 38 wks.
[2711] Melanomas. 1 splenic hemangioma.
[2712] 1 dermal squamous cell carcinoma, 2 forestomach papillomas, melanotic tumors.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
497. 9,10-DIMETHYL-1,2-BENZANTHRACENE (Continued)								
Shubik, P., et al., 1960	10 hamsters	Syrian golden	5 āā	50 μg. in 50 μl. of acetone once	Skin	Tumors[2713]	2 F, 1 M at 50 wks., 2 M at 85 wks.	85 wks.
Shubik, P., et al., 1960	30 hamsters	Syrian golden	15 āā	4 drops of 1% soln. in mineral oil once.	Skin	Tumors[2714]	6 F, 12 M at 40 wks., 5 M at 90 wks.	90 wks.
Shubik, P., et al., 1960	30 hamsters	Syrian golden	15 āā	4 drops of 1% soln. in mineral oil 3 times at wkly. intervals.	Skin	Tumors[2715]	7 F, 15 M at 40 wks., 1 M at 90 wks.	90 wks.
Standish, S. M., and Shafer, W. G., 1960.	58 rats	Sprague-Dawley albino.	M	2 mm. pellet in Carbowax	Lower pole of submaxillary gland implant.	Tumors[2716]	Sacrificed at 5, 6, 7, 8, 12 & 18 wks.	18 wks.
Standish, S. M., and Shafer, W. G., 1960.	60 rats[2717]	Sprague-Dawley albino.	M	2 mm. pellet in Carbowax	Lower pole of submaxillary gland implant.	Tumors[2718]	Sacrificed at 5, 6, 7, 8, 12 & 18 wks.	18 wks.
Standish, S. M., and Shafer, W. G., 1960.	17 rats	Sprague-Dawley albino.	M	2 mm. pellet in Carbowax	R. submaxillary gland implant.	Tumors[2719]	Sacrificed at 18 wks.	18 wks.
Standish, S. M., and Shafer, W. G., 1960.	19 rats[2720]	Sprague-Dawley albino.	M	2 mm. pellet in Carbowax	R. submaxillary gland implant.	Tumors[2721]	Sacrificed at 18 wks.	18 wks.
Stich, H. F., 1960	Mice[2722]	Swiss		0.03 ml. of 60 μg. in colloidal susp. once.	S.C. interscapular.	Tumors[2723, 2724]		120 d.
Stich, H. F., 1960	Mice[2722]	Swiss		0.03 ml. of 60 μg. in colloidal susp. twice, 7 d. apart.	S.C. interscapular.	Tumors[2723, 2724]		120 d.
Peirce, W. E. H., 1961	20 mice	Stock	F	100 μgm. in 0.25 ml. polyethylene glycol given once.[2725]	P.O., stomach tube.	Tumors[2726, 2727]	9 from 50–280 d	Survivors still under observation.
Peirce, W. E. H., 1961	20 mice	Stock	F	100 μgm. in 0.25 ml. polyethylene glycol given once.	P.O., stomach tube.	Tumors[3078, 3079]	10 from 50–280 d	Survivors still under observation.

[2713] 4 with melanomas.

[2714] 7 females with 12 melanomas at 27.7 wks. avg. 17 males with 32 melanomas at 28.3 wks. avg. 2 papillomas, 1 squamous cell carcinoma, 1 sebaceous adenoma, 1 cholangiocarcinoma. 100% with melanotic lesions.

[2716] 14 females with 50 melanomas at 25.4 wks avg; 11 males with 27 melanomas at 33.8 wks. avg. In females: 4 papillomas, 3 squamous cell carcinomas, 2 sebaceous adenomas, 1 rectal adenocarcinoma. In males: 13 papillomas, 3 squamous cell carcinomas, 7 sebaceous adenomas, 1 adnexal carcinoma, 2 malignant lymphomas. 100% with melanotic lesions.

[2716] 10 salivary duct epidermoid carcinomas (4 *in situ*). 1 rhabdomyosarcoma.

[2717] Right ligation and repositioning of submaxillary and sublingual salivary gland ducts.

[2718] 12 salivary duct epidermoid carcinomas (1 *in situ*). 1 fibrosarcoma-epidermoid carcinoma, 1 coalescing fibrosarcoma, rhabdomyosarcoma, epidermoid carcinoma.

[2719] 4 salivary duct epidermoid carcinomas (1 probable adenocarcinoma of salivary gland origin).

[2720] Arterial ligation of right submaxillary and sublingual salivary glands. 12 days before treatment.

[2721] 7 salivary duct epidermoid carcinomas (1 fibrosarcomarhabdomyosarcoma, 1 fibrosarcoma, 2 probable adenocarcinoma of salivary gland origin).

[2722] Age: under 24 hrs.

[2723] 50+% with lymphatic leukemia at 120 days.

[2724] Untreated controls negative.

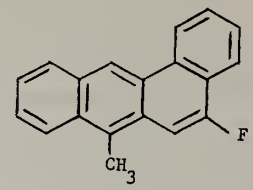
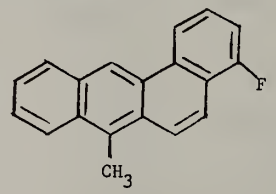
[2725] 40 weekly doses of 0.05 ml. lime oil begun 3 wks. later.

[2726] 9 with 55 benign forestomach tumors.

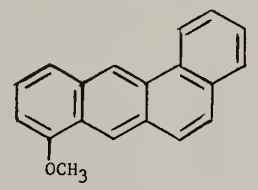
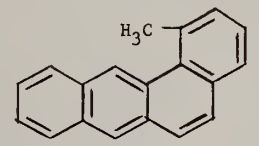
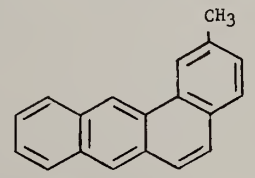
[2727] 20 untreated controls negative.

[3078] 8 with 27 benign forestomach tumors.

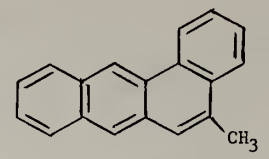
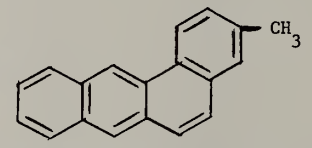
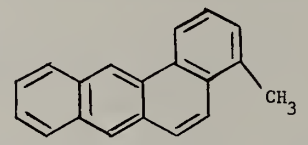
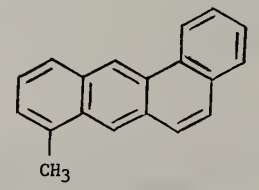
[3079] 20 untreated controls negative.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
498. 3-FLUORO-10-METHYL-1,2-BENZANTHRACENE 								
Miller, E. C., and Miller, J. A., 1960.	30 mice	Albino Sutter	F	322 μg. in 100 μl. of redistilled acetone once.[2728]	Skin	Tumors[2729, 2730].	28 at 4 mos	8 mos.
Miller, E. C., and Miller, J. A., 1960.	21 rats	Albino Holtzman.	M	0.25 ml. of 2.14 mg. dissolved in tricaprylin once.	S.C	0[2731]	8 at 16 mos	16 mos.
Miller, E. C., and Miller, J. A., 1960.	30 mice	Albino Sutter	F	70 μg. in 0.025 ml. of redistilled acetone twice wkly. for 20 wks.	Skin	Tumors[2732, 2733].		15 mos.
Miller, E. C., and Miller, J. A., 1960.	40 mice	Albino Taconic Farms.	F	322 μg in 100 μl. of redistilled acetone once.[2734]	Skin	Tumors[2735, 2736].	35 at 4 mos	8 mos.
Miller, E. C., and Miller, J. A., 1960.	30 mice	Albino Sutter	F	0.1 ml. of 1.07 mg. dissolved in tricaprylin once.	S.C	0[2737]	8 at 13 mos	13 mos.
499. 4'-FLUORO-10-METHYL-1,2-BENZANTHRACENE 								
Miller, E. C., and Miller, J. A., 1960.	40 mice	Albino Taconic Farms.	F	322 μg. in 100 μl. of redistilled acetone once.[2734]	Skin	0[2736, 2738]	22 at 4 mos	8 mos.
Miller, E. C., and Miller, J. A., 1960.	29 mice	Albino Sutter	F	322 μg. in 100 μl. of redistilled acetone once.[2728]	Skin	Tumors[2730, 2739].	23 at 4 mos	8 mos.
Miller, E. C., and Miller, J. A., 1960.	36 mice	Albino Taconic Farms.	F	107 μg. in 100 μl. of redistilled acetone once.[2740]	Skin	Tumors[2741, 2742].	27 at 5 mos	10 mos.
Miller, E. C., and Miller, J. A., 1960.	29 mice	Albino Taconic Farms.	F	0.1 ml. of 1.07 mg. dissolved in tricaprylin once.	S.C		3 at 9 mos	At least 9 mos.

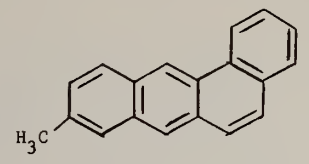
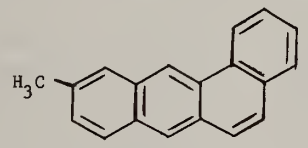
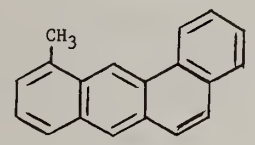
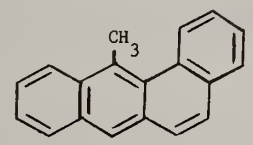
[2728] Semiweekly application of 0.05 ml. 0.2% croton oil in acetone begun 6 wks. later, continued for duration.
[2729] 3 with 5 papillomas at 8 mos.
[2730] 1/26 croton oil controls with 1 papilloma.
[2731] 20 tricaprylin treated controls negative.
[2732] 2 treated area papillomas.
[2733] 30 acetone controls negative.
[2734] Semiweekly applications of 0.05 ml. 0.5% croton oil in acetone begun 3 wks. later, continued for duration.
[2735] 7 with 8 papillomas at 8 mos.
[2736] 6/40 croton oil controls with 9 papillomas.
[2737] 30 tricaprylin controls negative.
[2738] 5 with 5 papillomas at 4 mos.
[2739] 4 with 4 papillomas at 8 mos.
[2740] Semiweekly applications of 0.05 ml. 0.5% croton oil in acetone begun 1 wk. later, continued for duration.
[2741] 12 with 18 papillomas at 8 mos.
[2742] 4/27 croton oil controls with papillomas at 8 mos.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
499. 4′-FLUORO-10-METHYL-1,2-BENZANTHRACENE (Continued)								
Miller, E. C., and Miller, J. A., 1960.	21 rats	Albino Holtzman.	M	0.25 ml. of 2.14 mg. dissolved in tricaprylin once.	S.C	0[2731]	8 at 16 mos	16 mos.
Hartmann, H. A., et al., 1959	10 rats	Holtzman	M	1.07 mg. in 0.2 ml. tricaprylin one inj.	S.C	0[2743]	Sacrificed at 8 wks.	8 wks.
Hartmann, H. A., et al., 1959	26 rats	Holtzman	M	2.14 mg. in 0.2 ml. tricaprylin one inj.	S.C	0[2744]	Sacrificed at 8 wks.	8 wks.
500. 5-METHOXY-1:2-BENZANTHRACENE 								
Schoental, R., and Head, M. A., 1955.	17 mice	Mixed	7 M, 10 F	1.5 mg.[2745] in 0.15 ml. tricaprylin once.	S.C	Tumors[2746]		At least 25 mos.
501. 1′-METHYL-1,2-BENZANTHRACENE 								
Dunning, W. F., and Curtis, M. R., 1960.	60 rats	Fischer 344	30 F, 30 M	2 mg. in 0.2 cc. warm paraffin soln. total 4 mg./rat.	S.C	Tumors[2747]		At least 438 d.
502. 2′-METHYL-1,2-BENZANTHRACENE 								
Dunning, W. F., and Curtis, M. R., 1960.	60 rats	Fischer 344	30 F, 30 M	2 mg. in 0.2 cc. warm paraffin soln., total 4 mg./rat.	S.C	0		

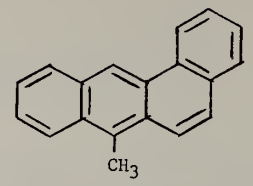
[2731] 20 tricaprylin treated controls negative.
[2743] 8 with periarteritis.
[2744] 13 with periarteritis.
[2745] Pure.
[2746] 5 with injection site spindle cell sarcomas (1 pulmonary adenoma, 1 hepatoma); 1 isolated pulmonary adenoma. (Comparable to controls.)
[2747] 2 tumors, avg. latent period 438 days.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
				503. 3-METHYL-1,2-BENZANTHRACENE 				
Dunning, W. F., and Curtis, M. R., 1960.	60 rats	Fischer 344	30 F, 30 M	2 mg. in 0.2 cc. warm paraffin soln., total 4 mg./rat.	S.C.	Tumors[2748]		At least 417 d.
				504. 3′-METHYL-1,2-BENZANTHRACENE 				
Dunning, W. F., and Curtis, M. R., 1960.	60 rats	Fischer 344	30 F, 30 M	2 mg. in 0.2 cc. warm paraffin soln., total 4 mg./rats.	S.C.	0		
				505. 4′-METHYL-1,2-BENZANTHRACENE 				
Dunning, W. F., and Curtis, M. R., 1960.	60 rats	Fischer 344	30 F, 30 M	2 mg. in 0.2 cc. warm paraffin soln., total 4 mg./rat.	S.C.	Tumors[2749]		At least 495 d.
Dunning, W. F., and Curtis, M. R., 1960.	60 rats	Rischer 344	30 F, 30 M	2 mg. in 0.2 cc. warm paraffin soln., total 4 mg./rat.	S.C.	Tumors[2750]		At least 235 d.
				506. 5-METHYL-1,2-BENZANTHRACENE 				
Dunning, W. F., and Curtis, M. R., 1960.	60 rats	Fischer 344	30 M, 30 F	2 mg. in 0.2 cc. warm paraffin soln., total 4 mg./rat.	S.C.	Tumors[2751]		At least 265 d.

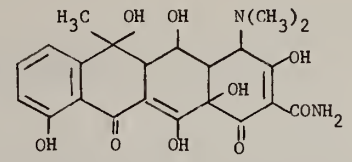
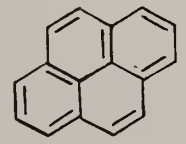
[2748] 2 tumors, avg. latent period 417 days.
[2749] 3 tumors, avg. latent period 495 days.
[2750] 45 fibrosarcomas, 4 rhabdomyosarcomas, 5 probable myogenic sarcomas, 1 osteosarcoma, 1 liposarcoma, 2 sarcomas. Avg. latent period 235 days.
[2751] 32 fibrosarcomas, 1 rhabdomyosarcoma, 2 probable myogenic sarcomas, 1 osteosarcoma, 1 angiosarcoma, 4 sarcomas. Avg. latent period 265 days.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
507. 6-METHYL-1,2-BENZANTHRACENE 								
Dunning, W. F., and Curtis, M. R., 1960.	60 rats	Fischer 344	30 F, 30 M	2 mg. in 0.2 cc. warm paraffin soln., total 4 mg./rat.	S.C.	Tumors[2752]		At least 413 d.
508. 7-METHYL-1,2-BENZANTHRACENE 								
Dunning, W. F., and Curtis, M. R., 1960.	60 rats	Fischer 344	30 F, 30 M	2 mg. in 0.2 cc. warm paraffin soln., total 4 mg./rat.	S.C.	Tumors[2753]		At least 396 d.
509. 8-METHYL-1,2-BENZANTHRACENE 								
Dunning, W. F., and Curtis, M. R., 1960.	60 rats	Fischer 344	30 F, 30 M	2 mg. in 0.2 cc. warm paraffin soln., total 4 mg./rat.	S.C.	0		
510. 9-METHYL-1,2-BENZANTHRACENE 								
Dunning, W. F., and Curtis, M. R., 1960.	60 rats	Fischer 344	30 F, 30 M	2 mg. in 0.2 cc. warm paraffin soln., total 4 mg./rat.	S.C.	Tumors[2754]		At least 292 d.

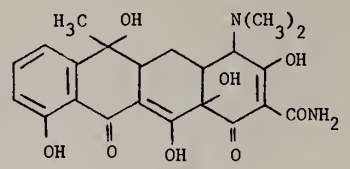
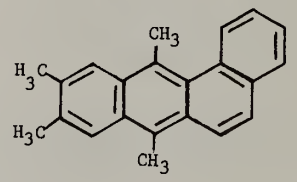
[2752] 3 tumors, avg. latent period, 413 days.
[2753] 3 tumors, avg. latent period, 396 days.
[2754] 27 fibrosarcomas, 9 probable myogenic sarcomas, 1 chondrosarcoma, 1 osteosarcoma, 1 sarcoma. Avg. latent period 292 days.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
511. 10-METHYL-1,2-BENZANTHRACENE 								
Lindner, A., and Muller, A., 1954.	10 rats	Wistar	F	(97 mg. in 3 ml. tricaprylin soln.) 0.1 ml.—3.2 mg.	S.C.	Tumors[2765]	5 at 1 yr., 3 at 2 yrs.	2 yrs.
Hartmann, H. A., et al., 1959.	18 rats	Holtzman	M	2 mg. in 0.2 ml. tricaprylin one inj.	S.C.	0	Sacrified at 8 wks.	8 wks.
Dunning, W. F., and Curtis, M. R., 1960.	60 rats	Fischer 344	30 F, 30 M	2 mg. in 0.2 cc. warm paraffin soln., total 4 mg./rat.	S.C.	Tumors[2766]		At least 201 d.
Miller, E. C., and Miller, J. A., 1960.	28 mice	Albino Taconic Farms.	F	0.1 ml. of 1 mg. dissolved in tricaprylin once.	S.C.	Tumors[2767, 2768]		13 mos.
Miller, E. C., and Miller, J. A., 1960.	30 mice	Albino Sutter	F	0.1 ml. of 1 mg. dissolved in tricaprylin once.	S.C.	Tumors[2769, 2760]		13 mos.
Miller, E. C., and Miller, J. A., 1960.	30 mice	Albino Sutter	F	70 μg. in 0.025 ml. redist. acetone twice wkly. for 20 wks.	Skin	Tumors[2761, 2762]		15 mos.
Miller, E. C., and Miller, J. A., 1960.	36 mice	Albino Taconic Farms.	F	100 μg. in 100 μl. of redist. acetone once.[2763]	Skin	Tumors[2764, 2766]	32 at 5 mos.	10 mos.
Miller, E. C., and Miller, J. A., 1960.	40 mice	Albino Taconic Farms.	F	300 μg. in 100 μl. of redist. acetone once.[2766]	Skin	Tumors[2767, 2768]	35 at 4 mos.	8 mos.
Miller, E. C., and Miller, J. A., 1960.	29 mice	Albino Sutter	F	300 μg. in 100 μl. of redist. acetone once.[2769]	Skin	Tumors[2770, 2771]	27 at 4 mos.	8 mos.
Miller, E. C., and Miller, J. A., 1960.	20 rats	Albino Holtzman.	M	0.25 ml. of 2 mg. dissolved in tricaprylin once.	S.C.	Tumors[2772, 2773]		16 mos.

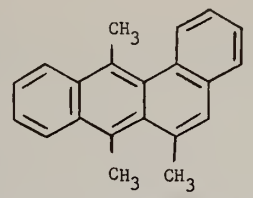
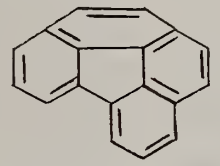
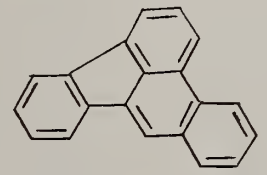
[2765] 5 sarcomas.
[2756] 78 fibrosarcomas, 2 rhabdomyosarcomas, 9 probable myogenic sarcomas, 1 chondrosarcoma, 1 osteosarcoma, 2 adenocarcinoma-sarcoma, 2 squamous cell sarcoma-sarcoma, 2 sarcomas, avg. latent period 201 days.
[2757] 50% sarcomas.
[2758] 27 tricaprylin controls negative.
[2759] 33% sarcomas.
[2760] 30 tricaprylin controls negative.
[2761] 52% dermal carcinoma at 15 mos.
[2762] 30 acetone controls negative.
[2763] Semiweekly applications of 0.05 ml. 0.5% croton oil in acetone begun 1 wk. later, continued for duration.
[2764] 16 with 36 papillomas at 4 mos., 3 carcinomas at 8–10 mos.
[2765] 4/27 croton oil controls with papillomas at 8 mos.
[2766] Semiweekly applications of 0.05 ml. 0.5% croton oil in acetone begun 3 wks. later, continued for duration.
[2767] 22 with 52 papillomas at 5 mos.
[2768] 6/40 croton oil controls with 9 papillomas.
[2769] Semiweekly applications of 0.05 ml. 0.2% croton oil in acetone begun 6 wks. later, continued for duration.
[2770] 12 with 21 papillomas at 8 mos.
[2771] 1/26 croton oil controls with 1 papilloma.
[2772] 63% sarcomas.
[2773] 20 tricaprylin controls negative.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
512. OXYTETRACYCLINE 								
Nelson, A. A., and Radomski, J. L., 1954.	8 dogs[1797]	Mongrel		250 mg./kg. capsule/d., 6 d./wk. for 99 d.	P.O	0[2774]	100%	99 d.
Reutner, T. F., et al., 1955	4 dogs			250 mg./kg. capsule daily, 6 d./wk	P.O	0	Killed at 5 wks	5 wks.
Maffii, G., and Mainardi, L., 1955.	15 rats for each chemical at each dose.			50 mg./kg. body wt. daily for 31 d.[798]	P.O	0		31 d.
Uram, J. A., et al., 1955	40 rats[1798,2775]	Wistar	30 F, 10 M	0.036% in basal diet[2776] about 100 d.[798]	P.O	0[2777]		More than 100 d.
513. PYRENE 								
Graffi, A., et al., 1953	150 mice		M	3 drops 3% in acetone once wkly. followed by 1 drop 5% croton oil in mineral oil once wkly.	Skin	Tumors[2778]	0 at 12th mo	12 mos.
Salaman and Roe, 1956	20 mice	Albino "S"		10 thrice wkly. applications of 8.3% soln. in acetone (total dose—0.25 g.).[2779]	Skin	6 (total of 9 pap.).	20 at 25 wks	Approx. 27 wks.

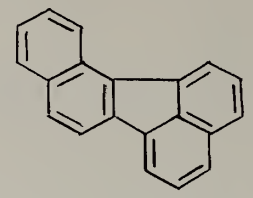
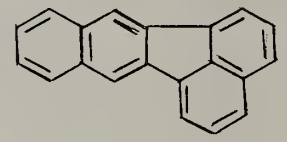
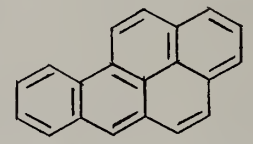
[798] As hydrochloride.
[1797] Age: 2–5 yrs.
[1798] Weanling.
[2774] No pathological changes.
[2775] Experimental groups: 16 second generation females.
[2776] Refrigerated.
[2777] Reproduction unaltered for both generations.
[2778] 2 papillomas.
[2779] Weekly applications of croton oil in acetone: 2 of 0.085%, 16 of 0.17%; begun 25 days later.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
514. TETRACYCLINE 								
Nelson, A. A., and Radomski, J. L., 1954.	4 dogs[1797]	Mongrel		250 mg./kg. capsule/d., 6 d./wk. for 98 d.	P.O	0[2774]	100%	98 d.
Tisch, D. E., et al., 1954	10 rats		5 āā	400 mg./kg. as 5% aqueous susp. in 2% dextrin soln. 5 d./wk. for 3 mos.[798]	P.O	0		5 mos.
Tisch, D. E., et al., 1954	20 rats		10 āā	50 mg./kg. of 0.5% soln. in 0.2 M glycine 5 d./wk. for 4 wks., then given 100 mg./kg. for 4 wks.[798]	I.P	0	16 at 4 wks	20 wks.
Tisch, D. E., et al., 1954	15 rats			50, 100 or 150 mg./kg. as 2% susp. in 40% propylene glycol 5 d./wk.[798]	I.P	0	2 died in 150 mg/kg. group.	5 wks.
Tisch, D. E., et al., 1954	10 rats		5 āā	200 mg./kg. as 5% aqeuous susp. in 2% dextrin soln. 5 d./wk. for 3 mos.[798]	P.O	0		5 mos.
Maffii, G., and Mainardi, L., 1955.	15 rats for each chemical at each dose			50 mg./kg. body wt. daily for 31 d.[798]	P.O	0		31 d.
515. 6,7,9,10-TETRAMETHYL-1,2-BENZANTHRACENE 								
de Clercq, M., et al., 1954	20 mice	XVII		3 times 1 mg. in peanut oil at 1 mo. intervals.	S.C	Tumors[2780]		Life.
de Clercq, M., et al., 1954	10 mice	XVII		0.1% in acetone or benzene 2 times a wk.	Nape of neck	Tumors[2781]		Life.
de Clercq, M., et al., 1954	10 mice	XVII		0.3% in acetone or benzene 2 times a wk.	Nape of neck	Tumors[2782]		Life.

[798] As hydrochloride.
[1797] Age: 2–5 yrs.
[2774] No pathological changes.
[2780] 3 sarcomas.
[2781] 5 papillomas, 3 epitheliomas.
[2782] 2 papillomas, 1 epithelioma.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
516. 4,9,10-TRIMETHYL-1,2-BENZANTHRACENE 								
de Clercq, M., et al., 1954	10 mice	XVII		3 times 1 mg. in peanut oil at 1 mo. intervals.	S.C	Tumors[2783]		Life
de Clercq, M., et al., 1954	10 mice	XVII		0.3% in acetone or benzene 2 times a wk.	Nape of neck	Tumors[2784]		Life.
B. ORGANIC COMPOUNDS—6. PENTACYCLIC								
517. 1,10-BENZOFLUORANTHENE 								
Wynder, E. L., and Hoffmann, D., 1959.	20 mice	Swiss	F	0.5% soln. in acetone thrice wkly	Skin	0	18 at 6 mos., 15 at 13 mos.	13 mos.
	20 mice	Swiss	F	0.1% soln. in acetone thrice wkly	Skin	0	12 at 13 mos	13 mos.
518. 3,4-BENZOFLUORANTHENE 								
Wynder, E. L., and Hoffmann, D., 1959.	20 mice	Swiss	F	0.1% soln. in acetone thrice wkly	Skin	Tumors[2786]	3 at 11 mos	Less than 1 yr.
	20 mice	Swiss	F	0.5% soln. in acetone thrice wkly	Skin	Tumors[2787]	6 at 7 mos	Less than 8 mos.
	20 mice	Swiss	F	0.01% soln. in acetone thrice wkly	Skin	Tumors[2788]	10 at 14 mos	14 mos.

[2783] 2 sarcomas.
[2784] 6 papillomas, 3 epitheliomas.
[2786] Propinylcyclohexanol carbamate.
[2786] 65% papillomas and 85% dermal carcinomas.
[2787] 100% papillomas and 90% dermal carcinomas.
[2788] 5% papillomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
519. 10,11-BENZOFLUORANTHENE 								
Wynder, E. L., and Hoffmann, D., 1959.	20 mice	Swiss	F	0.1% soln. in acetone thrice wkly	Skin	Tumors[2789]	4 at 8 mos	Less than 9 mos.
	20 mice	Swiss	F	0.5% soln. in acetone thrice wkly	Skin	Tumors[2790]	3 at 6 mos	Less than 7 mos.
520. 11,12-BENZOFLUORANTHENE 								
Wynder, E. L., and Hoffmann, D., 1959.	20 mice	Swiss	F	0.5% soln. in acetone thrice wkly	Skin	Tumors[2791]	14 at 6 mos., 3 at 13 mos.	13 mos.
Wynder, E. L., and Hoffmann, D., 1959.	20 mice	Swiss	F	0.1% soln. in acetone thrice wkly	Skin	0	8 at 13 mos	13 mos.
521. 3,4-BENZPYRENE 								
Delaini, G., 1945	14 mice			5 mg. in almond oil, once	S.C	2 sarcomas[2792].	12 sacrificed before 60 d.	At least 322 d.
Hueck, W., and Schober, R., 1952.	Mice			0.5% in paraffin oil, 4–5 drops twice wkly.	Skin	Tumors[2793]	Sacrificed at intervals.	At least 4 mos.
Hueck, W., and Schober, R.,	Mice			0.05% in benzene, 4–5 d. twice wkly	Skin	Tumors[2793]	Sacrificed at intervals.	At least 4 mos.
Picco, A., 1952	10 rats	Albino		10 mg. in 1 ml. olive oil, once	S.C	7[2794]		Up to 192 d.

[2789] 70% papillomas and 100% dermal carcinomas.
[2790] 95% papillomas and 95% dermal carcinomas.
[2791] 10% papillomas at 11 mos.
[2792] Avg. 280 days.
[2793] Study of skin tumor histopathogenesis.
[2794] Sarcomas at 49–110 days.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
521. 3,4-BENZPYRENE (Continued)								
Benko, A., et al., 1953	15 mice		M & F	In olive oil 5% daily painting	Skin	Tumors[2795]		33–343 d.
Benko, A., et al., 1953	7 mice		M & F	In olive oil 5 γ twice a wk., total dose 50–150 γ.	I.P	Tumor [2796]		35–73 d.
	15 mice		M & F	In olive oil 5% daily painting	Skin	Tumors[2795]		33–343 d.
Businco, L., et al., 1953	130 rats	White		1 ml. of 1% soln. of oil twice, one wk. apart.[2797]	S.C	Tumors[2798]		230 d.
	123 mice	White		2 drops of a 0.3% soln. in benzene twice wkly.[2799]	Skin	Tumors[2206]	60% at 30 d	170 d.
DiMacco, G., 1953	Rats[2800]		M	5 mg. in 1 ml. of olive oil	S.C	Tumors[2801]		At least 3 mos.
Hillemann, H. H., 1953	40 hamsters	Golden		10 mg. in aerosal & dist. water, kept on deficient diet.	S.C., interscapular region.	Tumors[2802]	None	At least 187 d.
	40 hamsters	Golden		10 mg. in aerosal & dist. water, kept on supplemented diet.	S.C., interscapular region.	Tumors[2803]	3 at end of experiment.	At least 187 d.
	40 hamsters	Golden		10 mg. in aerosal & dist. water, kept on whole diet.[2804]	S.C., interscapular region.	Tumors[2804]	3 at end of experiment.	At least 166 d.
	40 hamsters	Golden		10 mg. in aerosal & dist. water, kept on deficient diet.	S.C., interscapular region.	Tumors[2805]	1 at end of experiment.	At least 145 d.
	20 hamsters	Golden		10 mg. in aerosal & dist. water, kept on whole diet.	S.C., interscapular region.	Tumors[2806]	None	At least 161 d.
Kocke, H. U., 1953	50 mice (15–20 g.).	Albino		1 mg. in 4% agar (8 mm^3)	S.C. implant	Tumors[2807]		175 d.
	15 mice (15–20 g.).	Albino		2 mg. in 0.2 ml. olive oil	S.C	Tumors[2808]		313 d.
Carminati, V., and Chirico, M., 1954.	50 rats		M & F	10 mg. in 1 ml. of lard, once, in l. groin, one d. after inj. in both groins of 1 ml. of 1.5% soln. in saline of silicon dioxide.	S.C	Tumors[2809]		Up to 235 d.
DeAngelis, G., et al., 1954	130 mice	White		0.3% soln. in benzene twice wkly	Skin	Tumors[2810]	114 at first tumor	At least 155 d.
Engel, P., 1954	20 mice			0.3% in benzene daily	Skin	Tumors[2811]	14	

[2206] Of dermis.
[2795] 1 with papilloma.
[2798] 2 with tumors.
[2797] 110 given unsaturated fatty acids P.O. or S.C.
[2798] Sarcomas.
[2799] 44 given unsaturated fatty acids P.O., 44 by skin application.
[2800] Different diets.
[2801] 60–70% with tumors.
[2802] 27 with sarcoma at 152.8 days avg.
[2803] 15 with sarcoma at 127 days avg.
[2804] 27 with sarcomas at 127.48 days avg.
[2805] 19 with sarcoma at 112.15 days avg.
[2806] 8 with sarcoma at 139.8 days avg.
[2807] 1 papilloma, 11 sarcomas.
[2808] 12 sarcomas.
[2809] 100% with l. inguinal fibrosarcomas. 21 with rt. inguinal sarcomas.
[2810] 51 dermal tumors.
[2811] 14 basal cell carcinoma.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
				521. 3,4-BENZPYRENE (Continued)				
	20 mice			0.3% in benzene daily	Skin	Tumors[2811]	14	
	20 mice			0.2 ml. of a 0.5% susp. in 25% aqueous Tween 80 soln.	S.C. wkly	Tumors[2812]	8	
	20 rats			1 ml. of a 0.5% susp. in 25% aqeuous Tween 80 soln.—wkly. for 10 wks.	S.C	Tumors[2813]	17	
Ferraris, F., 1954	40 rats		F	5 mg. in 0.2 ml. of olive oil, once[2814]	Uterus			11 mos.
Gagne, F., et al., 1954	30 mice		M & F	0.1–0.2 ml. of 2% in oil	Into renal pelvis[2815].	5[2816]	8 at 40 d	At least 93 d.
	84 rats	Wistar	M & F	1–2 ml. of 2% in oil	Into renal pelvis[2815]	6[2817]	31 at 50 d., 12 at 132 d.	At least 368 d.
Poel, W. E., et al., 1954	Mice	CAF	M	0.2, 2.0, 10 or 20 μg. 3 times/wk	Skin	Tumors[2818]		
	Mice	C57BL/6	M	0.2, 2.0, 10 or 20 μg. 3 times/wk	Skin	Tumors[2818]		
	Mice	DBA/212	M	0.2, 2.0, 10 or 20 μg. 3 times/wk	Skin	Tumors[2818]		
Pollard, M., and Bussell, R. H., 1954.	28–30 mice[47]	C3H		0.5 mg. susp. in cooking oil, 2 bi-wkly. injs.	S.C	Tumors[2819]		12 wks.
	28–30 mice	C3H		0.5 mg. in cooking oil, 2 biwkly. injs.	S.C	Sarc		Over 12 wks.
Salley, J. J., 1954	6 hamsters	Syrian	3 āā	0.5% soln. in benzene 3 times a wk. for 16 wks.	Cheek pouch	0	4 at 16 wks	16 wks.
	6 hamsters	Syrian	3 āā	0.5% soln. in acetone 3 times a wk. for 16 wks.	Cheek pouch	Tumors[2820]	5 at 16 wks	16 wks.
Schinz, H. R., et al., 1954	10 mice			1 drop of 0.8% soln. (ca 240 μg benzpyrene) in 70% carbowax water thrice wkly. at nape of neck.	Skin	Tumors[2821]		At least 5 mos.
	9 hamsters	Golden		1 drop of 0.8% soln. (ca 240 μg benzpyrene) in 70% carbowax water thrice wkly. for 14 mos. at nape of neck.	Skin	Tumors[2822]	6 at 14 mos	16 mos.
	Guinea pigs			1 drop of 0.8% soln. (ca 240 μg benzpyrene) in 70% carbowax water thrice wkly. at nape of neck.	Skin	0		18 mos.

[47] Young.
[2811] 14 basal cell carcinoma.
[2812] 7 fibrosarcomas.
[2813] 17 sarcomas.
[2814] Given Vitamin D_2 and dioxydiethylstilbene.
[2815] Unilateral ureteral ligation 1 mo. before treatment.
[2816] 5 squamous cell carcinomas.
[2817] 4 squamous cell carcinomas, 3 sarcomas.
[2818] Exposure site papillomas and epidermoid carcinomas.
[2819] Injection site fibrosarcomas.
[2820] 1 benign papilloma, 2 squamous cell carcinomas (*in situ*), 2 carcinomas with metastasis.
[2821] 9 epitheliomas.
[2822] 3 epitheliomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
521. 3,4-BENZPYRENE (Continued)								
	Rats			1 drop of 0.8% soln. (ca 240 μg benzpyrene) in 70% carbowax water thrice wkly. at nape of neck.	Skin	0		18 mos.
Steiner, P. E., 1954	50 mice	C57BL	M & F	0.09 mg. per mouse in 1 cc. tricaprylin.	S.C., interscapular.	39 sarc	233 d. avg	15 mos.
Agate, F. J., Jr., et al., 1955	Rats	Long-Evans	M & F	10 mg. in 1.0 cc. of sesame oil	S.C	12 sarc[2823]	5 died with tumors by 195 d.	204 d.
Agate, F. J., Jr., et al., 1955	20 rats[2824]	Long-Evans	M & F	10 mg. in 1.0 cc. of sesame oil	S.C	12 sarc[2823]	8 died tumor free by 92 d.	231 d.
	20 rats[2824]	Long Evans	M & F	10 mg. in 1.0 cc. of sesame oil	S.C	12 sarc[2823]	8 died tumor free by 92 d.	231 d.
Barboni, F., and Quintarelli, G., 1955.	30 rats	Albino		10.2 mg. in linseed oil every 2 wks. for 5 mos.	I.M. into tongue.	6[2825]	12 at end of treatment.	1 yr.
	20 rats	Albino		0.4 mg. in linseed oil every 2 wks. for 5 mos.	I.M. into tongue.	2 with rhabdomyosarcoma.	8 at the end of treatment.	1 yr.
Berenblum and Haran, 1955	55 mice	Swiss	M	0.3 ml. of 0.5% BP in PEG solvent, once.[2826,2827]	P.O., stomach tube.	Tumors[2828]	37 at 10 wks	30 wks.
	30 mice	C3H	M	30 wkly. administrations of 0.3 ml. of 0.5% carcinogen in polyethylene[2829] glycol-400.	P.O., stomach tube.	Tumors[2830]	25 at 10 wks	30 wks.
	20 mice	Swiss	M	1 dose of 0.3 ml. of 0.5% carcinogen in polyethylene glycol-400[2831]	P.O., stomach tube.	Tumors[2832]	18 at 10 wks	30 wks.
	24 mice	Swiss	M	0.3 ml. of 0.5% BP in PEG solvent, once.[2833,2827]	P.O., stomach tube.	Tumors[2834]	20 at 10 wks	30 wks.
	20 mice	Swiss	M	0.3 ml. of 0.5% BP in PEG solvent, once.[2835]	P.O., stomach tube.	17 paps. of forestomach.	18 at 10 wks	30 wks.
	30 mice	Swiss	M	0.3 ml. of 0.5% BP in PEG solvent, 3 times at 24-hr. intervals.[2833,2827]	P.O., stomach tube.	10 paps. of forestomach.	24 at 10 wks	30 wks.
	21 mice	C3H	M	0.3 ml. of 0.5% BP in PEG solvent, twice, at a 1 wk. interval.[2833,2829]	P.O., stomach tube.	0	14 at 10 wks	30 wks.
	41 mice	Swiss	M	0.3 ml. of 0.5% BP in PEG solvent, 3 times, at 24-hr. intervals.[2827,2826]	P.O., stomach tube.	Tumors[2836]	24 at 10 wks	30 wks.

[2823] Spindle cell.
[2824] Hypophysectomized.
[2825] 3 with fibrosarcomas, 3 with polymorphic cell sarcomas.
[2826] 30 weekly doses .3 ml. of 3% croton oil in PEG after treatment.
[2827] Milk only for 3 days, water only for 18 hrs. before treatment. Water only for 18 hrs. before secondary treatment.
[2828] 27 forestomach papillomas, 2 forestomach carcinomas.
[2829] Food withheld 18 hrs. before treatment.
[2830] Forestomach tumors: 1 carcinoma at 11–20 wks; 1 papilloma, 15 carcinomas at 21–30 wks.
[2831] Milk only for 3 days before treatment.
[2832] Forestomach tumors: 1 papilloma at 11–21 wks.; 16 papillomas at 21–30 wks.
[2833] 30 weekly doses .3 ml. of PEG after treatment.
[2834] Forestomach tumors: 10 papillomas, 1 carcinoma.
[2835] Milk only for 3 days, water only for 18 hrs. before treatment.
[2836] Forestomach tumors: 14 papillomas, 4 carcinomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
521. 3,4-BENZPYRENE (Continued)								
	30 mice	C3H	M	0.3 ml. of 0.5% BP in PEG solvent, twice, at 1 wk. interval.[2829,2837]	P.O., stomach tube.	Tumors[2838]	22 at 10 wks	30 wks.
Calcutt, G., and Payne, S., 1955.	Rats[2839]	Wistar	M	2 mg. in colloidal susp. in dist. water given wkly., total of 20 mg.	I.P	0	Killed at wkly. intervals.	Up to 10 wks.
	Rats[2839]	Wistar	F	2 mg. in colloidal susp. in dist. water given wkly., total of 16 mg.	I.P	0	Killed at wkly. intervals.	Up to 8 wks.
	Rats[2839]	Wistar	M	2 mg. in colloidal susp. in dist. water given twice wkly., total of 24 mg.	I.P	0	Killed at wkly. intervals.	Up to 6 wks.
Caputo, A., and Giovanella, B., 1955.	43 rats	Wistar	M & F	Fibrin sponge impregnated with a 10% soln.	Intra-cerebrum	15[2840]		At least 120 d.
Carminati, V., and Baglioni, T., 1955.	49 rats[2841]	Albino	F	10 mg. in 1 ml. of melted lard, once	S.C	Tumors[2842]		At least 7 mos.
Chahovitch, X., 1955	12 spermophiles (Marchurian marmots).			1 ml. of 1% in oil	S.C	0	11 at 5 mos	2 yrs.
Dontenwill, W., 1955	58 mice			5 drops of 1% acetone soln. every 3 d	Skin	0	12 at 35 d	42 d.
Grant, R., and Ivy, A. C., 1955.	9 rats	Sprague-Dawley.	F	2–3 mg. thread for 200 d.[2843]	Embedded in gastric submucosa.	Tumors[2844]		200 d.
	Rats	Sprague-Dawley.	F	2–3 mg. thread for 50 d	Embedded in gastric submucosa.	Tumors[2845]		77 d. or more.
	5 rats	Sprague-Dawley.	F	2–3 mg. thread for over 200 d.[2843]	Embedded in gastric submucosa.	Tumors[2846]		Over 200 d.
	Rats	Sprague-Dawley.	F	2–3 mg. thread for 200 d	Embedded in gastric submucosa.	Tumors[2847]		200 d.
Griffin, A. Clark, et al., 1955	Rats[2824]	Sprague-Dawley.	M	10 mg. in olive oil once	I.M	Tumors[2848]	All killed at 20 wks.	20 wks.
	Rats	Sprague-Dawley.	M	10 mg. in olive oil once	I.M	Tumors[2849]	All killed at 20 wks.	20 wks.

[2824] Hy[illegible]ysectomized.
[2829] Food withheld 18 hrs. before treatment.
[2837] 30 weekly doses of 0.3 ml. 1% croton oil in PEG after treatment.
[2838] Forestomach tumors: 1 papilloma, 3 carcinomas at 20 wks; 6 papillomas, 4 carcinomas at 30 wks.
[2839] Age: 6–9 mos.
[2840] Histology study of induced cerebral tumors.
[2841] 25 on Vitamin A deficient diet.
[2842] Approx. 100% with injection site sarcomas. Study of dermal hyperplasia.
[2843] Submucosa cauterized; muscularis propria excised.
[2844] 1 adenoacanthoma at 345 days. 1 sarcoma-carcinoma at 140 days.
[2845] 1 paraparotid squamous cell carcinoma at 77 days.
[2846] 1 sarcoma at 132 days.
[2847] 1 sarcoma at 115 days.
[2848] 25% tumors.
[2849] 100% tumors.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
521. 3,4-BENZPYRENE (Continued)								
Steiner, 1955	Mice	C57BL	M &F	0.05 mg. in tricaprylin	S.C., interscapular region.	16 sarc. (76%).	21 at 145 d	22–28 mos.
Von Haam and Scarpelli, 1955.	80 mice	C3H	F	1% soln. of benzpyrene in acetone twice wkly.	Intravaginal painting.	Tumors[2850, 2851].	45 sacrificed before 40 wks.	At least 40 wks.
Balducci, F., 1956	50 rats	Albino		0.2 ml. of a soln. 0.5% in oil, once mthly.	I.M. in the tongue.	9[2852]	Sacrificed at intervals.	Up to 12 mos.
De Gaetani, G. F., 1956	43 rats	Albino		1 mgm. in 1 ml. of aqueous susp. once wkly. for 6 wks.	I.V	0[2853]		Up to 18 mos.
Hamer, D., and Woohouse, D. L., 1956.	30 mice	Albino		0.3 ml. of 0.3% soln., three times in 1 wk.	Skin	0	19 at 12 mos., 7 at 18 mos.	18 mos.
Kuhn, O., and Koecke, H. U., 1956.	Mice	Albino		1 mg. in Agar	S.C	Tumors[2854]		At least 237 d.
Kuschner, M., et al., 1956	Rats			Benzpyrene-impregnated thread implanted in lung, thru throacotomy, for 63 d.	Lung transfixion.	0[2855]		Still in progress.
Kuschner, M., et al., 1956	Rats			Unspecified amt. in pellet implanted in bronchi.	Bronchi	0[2856]		Still in progress.
McCarter, et al., 1956	23 mice	I	M	Exposure to 0.25% benzo(a) pyrene in acetone for 4 hrs.[2857]	Skin, back[2858]	8 (each with 1 pap.).		12 wks.
	23 mice	I	F	Exposure to 0.25% benzo(a) pyrene in acetone for 4 hrs.[2857]	Skin, back[2859]	11 (total of 14 pap.).		12 wks.
	19 mice	I	F	Exposure to 0.25% benzo(a) pyrene in acetone for 4 hrs.[2857]	Skin, back[2860]	10 (total of 17 pap.).		12 wks.
	23 mice	I	F	Exposure to 0.25% benzo(a) pyrene acetone for 4 hrs.[2857]	Skin, back[2858]	7 (total of 8 pap.).		12 wks.
Orr, J. W., 1956	Mice	1 F			Skin	0		
Poel, W. E., 1956	13 mice	DBA/2		1 μg. or less as 0.01% soln. in benzene 3 times a wk. for life span or until tumor developed.	Skin	Tumors[2861]	All survived 30 wks or more.	80 wks.
	12 mice	CAF_1		1 μg. or less as 0.01% soln. in benzene 3 times a wk. for life span or until tumor developed.	Skin	Tumors[2862]	10 survived 30 wks. or more.	75 wks.
	13 mice	C57BL		1 μg. or less as 0.01% soln. in benzene 3 times a wk. for life span or until tumor developed.	Skin	Tumors[2863]	4 survived 85 wks	85 wks.

[2850] 6 with epithelial dysplasia (1 vaginal, 3 cervical, 2 both) at 12–28 wks. 21 noninvasive carcinomas (7 vaginal, 7 cervical, 7 both) at 16–40 wks. 15 invasive carcinomas (2 vaginal, 4 cervical, 9 both) at 21–40 wks.
[2851] 30 acetone controls negative.
[2852] Lingual sarcomas, 1st at 7 mos.
[2853] 13 with dysplastic nodular bone lesions at 6–16 mos. after treatment.
[2854] Sarcomas. Pulmonary carcinomas.
[2855] Negative at 63 days.
[2855] Negative at 30 wks.
[2857] 20 semiweekly applications of 2.5% croton oil in paraffin begun 2 wks. later.
[2858] Exposure area: 1.44±0.18 cm^2. Excess removed with diethyl ether after 4 hrs.
[2859] Exposure area: 2.79±0.30 cm^2. Excess removed with diethyl ether after 4 hrs.
[2850] Exposure area: 2.79±0.30 cm^2. Excess removed with diethyl ether after 4 hrs.
[2861] 7 dermal tumors at 50–80 wks.
[2852] 4 dermal tumors at 60–75 wks.
[2853] 12 dermal tumors at 30–85 wks.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
521. 3,4-BENZPYRENE (Continued)								
	Mice			0.01 ml. of 1.25% in benzene (total approx. dose 125 μg).	Skin	0	40 wks	40 wks.
	Mice	C57BL	M	1 μg. in benzene 3 times a wk. for 40 wks. 120 applications total.	Skin	Tumors[2864]	40 wks	40 wks.
Poel and Kammer, 1956	Mice (8–17 wks. old).	C57BL/6	M	1 drop of a 0.5% soln. in benzene thrice wkly. for duration of experiment (approx. 50 μg./application).[2865]	Skin	11 (skin tumors)[2866].		At least 24 wks.
	Mice (8–17 wks. o.d).	C57BL/6	M	1 drop of 0.1% soln. in benzene thrice wkly. for duration of experiment (approx. 10 μg./application).[2865]	Skin	13 (skin tumors).[2867]		At least 29 wks.
	Mice (8–17 wks. old).	C57BL/6	M	1 drop of a 0.01% soln. in benzene thrice wkly. for duration of experiment (approx. 1 μg./application).[2865]	Skin	12 (skin tumors).[2868]		Approx. 89 wks.
	Mice (8–17 wks. old).	C57BL/6	M	1 drop of a 1.0% soln. in benzene thrice wkly. for duration of experiment (approx. 100 μg./application).[2865]	Skin	7 (skin tumors).[2869]		At least 24 wks.
	Mice (8–17 wks. old).	C57BL/6	M	1 drop of a 0.05% soln. in benzene thrice wkly. for duration of experiment (approx. 5 μg./application).[2865]	Skin	33 (skin tumors).[2870]		At least 44 wks.
	Mice (8–17 wks. old).	C57BL/6	M	1 drop of a 0.01% soln. in benzene thrice wkly. for duration of experiment (approx. 1 μg./application).[2865]	Skin	12 (skin tumors).[2871]	30 alive at 40 wks.	65 wks.[2872]
Willheim, R., et al., 1956	38 mice	Swiss white	M & F	0.3% soln. in acetone twice a wk. for 70 d.	Skin	Tumors[2873]	3 died by 97 d	105 d.
	Mice	Swiss white	M & F	0.3% soln. in acetone once a wk. for 70 d.	Skin	Tumors[2874]	Many died early	100–112 d.
Benko, S., and Kovacs, K., 1957.	50 rats	White	M & F	1 ml. 1% soln. of benzpyrene in sunflower oil.	Inj. into the glandular part of stomach, between the muscularis & mucosal layers.	Tumors[2875]	8 animals were alive at 504 d.	504 d.

[2864] 9/40 with tumors at 40 wks.
[2865] Until tumor formation or intercurrent death.
[2866] 6 tumors at 10–14 wks., 4 at 15–19 wks., 1 at 20–24 wks.
[2867] 1 tumor at 15–19 wks., 5 at 20–24 wks., 7 at 25–29 wks.
[2868] 100% in 40+wks. survivors.
[2869] 1 tumor at 10–14 wks., 4 at 15–19 wks., 2 at 20–24 wks.
[2870] 1 tumor at 15–19 wks., 11 at 20–24 wks., 13 at 25–29 wks., 7 at 30–34 wks., 1 at 40–44 wks.
[2871] 1 tumor at 25–29 wks., 3 at 35–39 wks., 4 at 40–44 wks., 1 at 50–54 wks., 2 at 55–59 wks., 1 at 60–64 wks.
[2872] Survivors killed at 65 wks. (intercurrent disease).
[2873] 20 with tumors (4 carcinoma).
[2874] 33 with tumors (4 carcinoma).
[2875] 3 forestomach carcinomas, 6 forestomach carcinomas, 1 sarcoma, 2 bronchiolar adenomas, 15 gastric adenomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
521. 3,4-BENZPYRENE (Continued)								
	50 rats	White	M & F	0.1 ml. 1% soln. of benzpyrene in sunflower oil, +0.2 ml. physostigmin 0.04% soln. S.C. (0.08 mg.) inj.	Inj. into the glandular part of stomach, between the muscularis & mucosal layers.	Tumors[2876]	8 animals alive on 504 d.	504 d.
	50 rats	White	M & F	1 ml. 1% soln. of benzypyrene in sunflower oil for the first 10 d. twice daily 0.2 ml. 1% atropine s.c., during the next 60 d. half as much, after 0.1 ml. daily (once).	Inj. into the glandular part of stomach, between the muscularis & mucosal layers.	0[2877]	7 animals alive at 504 d.	504 d.
Berenblum, I., and Haran-Ghera, N., 1957.	Mice	Swiss	F	0.3 ml. of 1.0% soln. in polycthylene glycol-400 once.[2878]	P.O., stomach tube.	Tumors[2879]	18 at end of experiment.	At least 32 wks.
Blacklock, J. W. S., 1957	8 rats	CB white		2 pellets containing total of 5.75 mg. benzpyrene & 5.75 mg. cholesterol.	L. intra-pulmonary insert.	Tumors[2880, 2881].	Mean survival 265 d.	383 d.
	6 rats	CB white		3 mg. in 0.15 ml. olive oil once	L. intra-pulmonary inj.	Tumors[2882, 2883].	Mean survival 245 d.	362 d.
	4 rats	CB white		3 mg. in 0.15 ml. olive oil once plus 0.01 mg. dead human tubercle bacilli.	L. intra-pulmonary inj.	Tumors[2884, 2885].	260, 384, 387, & 399 d. respect.	399 d.
Chentsov, Yu. S., 1957	25 rats	White	M	4 mg. in 1% soln., 2 injs	Inj. into r. thigh.	Tumors[2886, 2887].		
	10 rats	White	M	2 injs.—4 mg. in 1% soln	Inj. into r. thigh.	Tumors[2888, 2889].		
	20 rats	White	M	4 mg. in 0.5% soln. 4 times	Inj. into r. thigh.	Tumors[2890]		([2891]).
	25 rats	White	M	4 mg. in 1% soln., 2 injs	Inj. into r. thigh.	Tumors[2892]		([2893]).
Cuendet, J. F., et al., 1957	2 rabbits			20 μg. to the choroid coat of the eye	IV (vorticosa)	0	1 died at 7 mos	7½ mos.
	1 rabbit			10 μg. to the choroid coat of the eye	IV (vorticosa)	0		6 mos.
	1 rabbit			7 μg. to the choroid coat of the eye	IV (vorticosa)	0		7 mos.
	3 rabbits			390 μg. (0.1 ml.) in oil to the choroid coat of the eye.	IV (vorticosa)	0		5 mos.

[2876] 2 forestomach carcinomas, 6 forestomach sarcomas, 3 sarcomas, 10 gastric adenomas.
[2877] 2 forestomach carcinomas, 1 gastric sarcoma, 1 sarcoma, 1 bronchiolar adenoma, 12 gastric adenomas.
[2878] 64 semiweekly applications of 5% croton oil in paraffin after treatment.
[2879] 14 with papillomas, avg. 0.8/mouse. 2/21 croton oil controls with papillomas, avg. 0.09/mouse.
[2880] 4 sarcomas, 1 pulmonary epidermoid carcinoma.
[2881] Cholesterol pellet controls negative.
[2882] 5 with spindle cell pulmonary with sarcoma.
[2883] Olive oil controls negative.
[2884] 2 pulmonary sarcomas at 260 and 384 days.
[2885] Olive oil and bacilli controls negative.
[2886] 8 rhabdomyoblastomas, 14 sarcomas.
[2887] Latent period 126 days.
[2888] 2 rhabdomyoblastomas, 5 sarcomas.
[2889] Latent period, 131 days.
[2890] 3 rhabdomyoblastomas, 14 sarcomas.
[2891] Latent period, 139 days.
[2892] 7 rhabdomyoblastomas, 16 sarcomas.
[2893] Latent period, 133 days.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
521. 3,4-BENZPYRENE (Continued)								
Dannenberg, H., 1957	9 mice[2894]		4 M, 5 F	0.4% in benzene twice wkly. for 35 wks.	Skin, nape of neck.	Tumors[2895]	8 at 226 d	
	15 mice[2894]		5 M, 10 F	1 mg. in 0.2 ml. sesame oil	S.C	Tumors[2896]	15 at 111 d	
Horton, W. A., et al., 1957	19 mice	C3H		100 mg. of 0.08% in benzene thrice wkly. till end of experiment.	Skin	Tumors[2897]		At least 24 wks.
	20 mice	C3H		50 mg. of 0.20% in n-Dodecane for 3 wks.	Skin	Tumors[2898]		At least 14 wks.
	20 mice	C3H		50 mg. of 0.21% in n-Decane for 3 wks.	Skin	Tumors[2898]		At least 16 wks.
	19 mice	C3H		100 mg. of 0.08% in 20% n-Dodecane 80% benzene thrice wkly. till end of experiment.	Skin	Tumors[2897]		At least 24 wks.
	19 mice	C3H		100 mg. of 0.21% in n-Octane for 3 wks.	Skin	Tumors[2897]		At least 27 wks.
	23 mice	C3H		5 mg. of 0.08% in white mineral oil for 3 wks.	Skin	Tumors[2899]		At least 37 wks.
	18 mice	C3H		50 mg. of 0.20% in white mineral oil for 3 wks.	Skin	Tumors[2900]		At least 27 wks.
	11 mice	C3H		5 mg. of 0.17% in t-Dodecylbenzene for 3 wks.	Skin	Tumors[2901]		At least 15 wks.
	18 mice	C3H		100 mg. of 0.17% in t-Dodecylbenzene thrice wkly.	Skin	Tumors[2900]		At least 11 wks.
Kreshover, S. J., and Salley, J. J., 1957.	Hamsters	Golden-albino		In acetone triwkly. applications	Palatal mucosa & ears.	0[2902]		6 mos.
Mittler, S., and Nickolson, S., 1957.	11 mice	LAF1		1% in benzene applied twice a wk	Skin	11[2903]		7 mos.
Poel, W. E., 1957	Mice	DBA/2	M & F	0.009 cc. of 0.25% soln. in toluene 3 times/wk. for 22 to 42 wks.	Skin, interscapular.	Tumors[2904, 2905]	33–56 wks	Up to 56 wks.
	Mice	DBA/2	M & F	0.009 cc. of 1.25% soln. in toluene 3 times/wk. for 12–22 wks.	Skin, interscapular.	Tumors[2905, 2906]	24–43 wks	Up to 43 wks.
	Mice	C57L	M & F	0.009 cc. of 1.25% soln. in toluene 3 times/wk. for 11–22 wks.	Skin, interscapular.	Tumors[2905, 2907]	19–43 wks	Up to 43 wks.
	Mice	C57L	M & F	0.009 cc. of 0.25% soln. in toluene 3 times/wk. for 19–39 wks.	Skin, interscapular.	Tumors[2906, 2908]	21–44 wks	Up to 44 wks.

[2894] Age: 3–4 mos.
[2895] 7 epitheliomas, 1 sarcoma.
[2896] 15 spindle cell sarcomas.
[2897] 19 with papillomas.
[2898] 20 with papillomas.
[2899] 22 with papillomas.
[2900] 18 with papillomas.
[2901] 11 with papillomas.
[2902] Few otic papillomatous lesions.
[2903] 100% with dermal tumors.
[2904] 13 males and 12 females with papillomas; progressed to squamous cell carcinoma (3 with metastases).
[2905] Toluene controls negative.
[2906] 12 males and 10 females with papillomas; progressed to squamous cell carcinomas (6 with metastases).
[2907] 7 males and 7 females with papillomas; progressed to squamous cell carcinomas (2 with metastases).
[2908] 8 males and 8 females with papillomas; progressed to squamous cell carcinomas (3 with metastases).

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
521. 3,4-BENZPYRENE (Continued)								
	Mice	Inbred	M & F	4–100 μg./drop in toluene for lifetime.	Skin	Tumors[2909]	Lifetime	Lifetime.
Poel, W. E., and Kammer, A. G., 1957.	Mice	C57L	F	0.05% in toluene 3 times/wk	Skin	Tumors[2910, 2911]	9 considered effective.	At least 47 wks.
	Mice	C57L	M	0.05% in toluene 3 times/wk. plus 1 drop toluene for duration of experiment.	Skin	Tumors[2911, 2912]	10 at 20 wks	55 wks.
	Mice	C57L	F	0.25% in toluene 3 times/wk	Skin	Tumors[2911, 2913]	8 considered effective.	At least 26 wks.
Prodi, G., and Maltoni, C., 1957.	3 rabbits	Albino		0.3% acetone soln. twice wkly	Skin, l. flank	Tumors[2206]		Up to 116 d.
	6 rats	Albino		0.3% in acetone, painted twice wkly for 170 d.	Skin	0[2914]		170 d.
Scarpelli, D. G., and von Haam, E., 1957.	60 mice	C3H	F	1% soln. in acetone twice wkly	Intravaginal painting.	Tumors[2915]		At least 54 wks.
	15 mice	C3H	F	String impregnated with crystals	Endocervical canal insert.	Tumors[2916]		At least 38 wks.
	86 mice	C3H	F	1% soln. in acetone twice wkly	Intravaginal painting.	Tumors[2917]		At least 53 wks.
Shubik, P., and Della Porta, G., 1957.	12 mice	Swiss	M	Approx. 0.08 ml. of 1.5% soln. in purified acetone, 6d ./wk. up to 19 wks.	Skin	12[2918]	2 died by 17 wk	27 wks.
Wynder, E. L., et al., 1957	20 mice	Swiss		0.5% in acetone soln. 3 times/wk	Skin	Tumors[2919]	17 at 3 mos	Up to 6 mos.
	3 rabbits	New Zealand		0.01% in acetone soln. 5 times/wk	Skin of back & ears.	Tumors[2920]	3 at 11 mos	Up to 22 mos.
	3 rabbits	New Zealand		0.005% in acetone soln. 5 times/wk	Skin of back & ears.	0	1 at 12 mos	Up to 23 mos.
	3 rabbits	New Zealand		0.001% in acetone soln. 5 times/wk	Skin of back & ears.	0	2 at 9 mos	Up to 18 mos.
	20 mice	Swiss		0.0005% in acetone soln. 3 times/wk	Skin	0	17 at 10 mos	Up to 21 mos.
	20 mice	Swiss		0.0001% in acetone soln. 3 times/wk	Skin	0	18 at 10 mos	Up to 20 mos.
	20 mice	CAF_1		0.5% in acetone soln. 3 times/wk	Skin	Tumors[2921]	20 at 3 mos	Up to 6 mos.
	20 mice	CAF_1		0.05% in acetone soln. 3 times/wk	Skin	Tumors[2922]	18 at 3 mos	Up to 7 mos.

[2206] Of dermis.
[2909] Epitheliomas with metastases (pulmonary and cervical, axillary, and bronchial nodes). Latent period less in females.
[2910] 8 with papillomas (7 progressed to epidermoid carcinoma with 1 metastatic).
[2911] 10 toluene controls negative.
[2912] 8 with dermal tumors, 1 with hepatic carcinoma.
[2913] 8 with epidermoid carcinoma (2 metastasized).
[2914] Histological study of dermis.
[2915] 19 noninvasive squamous cell carcinomas; 12 invasive squamous cell carcinomas (8 vaginal, 11 cervical, 12 both).
[2916] 3 noninvasive squamous cell carcinomas; 8 invasive squamous cell carcinomas (1 vaginal, 8 cervical, 2 both).
[2917] 17 noninvasive squamous cell carcinomas; 27 invasive squamous cell carcinomas (9 vaginal, 13 cervical, 22 both).
[2918] 71 papillomas and squamous cell carcinomas, avg. latent period 10 wks.
[2919] 15 papillomas, 15 carcinomas at 6 mos.
[2920] 4 papillomas.
[2921] 20 papillomas, 17 carcinomas at 6 mos.
[2922] 17 papillomas, 15 carcinomas at 7 mos.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
				521. 3,4-BENZPYRENE (Continued)				
	20 mice	CAF_1		0.01% in acetone soln. 3 times/wk	Skin	Tumors[2923]	20 at 6 mos	Up to 13 mos.
	20 mice	CAF_1		0.005% in acetone soln. 3 times/wk	Skin	Tumors[2924]	19 at 9 mos	Up to 19 mos.
	20 mice	CAF_1		0.001% in acetone soln. 3 times/wk	Skin	Tumors[2925]	19 at 12 mos	Up to 24 mos.
Wynder, E. L., et al., 1957	20 mice	CAF_1		0.0005% in acetone soln. 3 times/wk	Skin	0	19 at 12 mos	Up to 24 mos.
	3 rabbits	New Zealand		0.0005% in acctone soln. 5 times/wk	Skin of back & ear.	0	3 at 12 mos	Up to 24 mos.
	3 rabbits	New Zealand		0.0001% in acetone soln. 5 times/wk	Skin of back & ears.	0	2 at 12 mos	Up to 24 mos.
	20 mice	CAF_1		0.0001% in acetone soln. 3 times/wk	Skin	0	19 at 12 mos	Up to 24 mos.
	20 mice	C57BL		0.5% in acetone soln. 3 times/wk	Skin	Tumors[2926]	20 at 3 mos	Up to 7 mos.
	20 mice	C57BL		0.05% in acetone soln. 3 times/wk	Skin	Tumors[2927]	19 at 3 mos	Up to 7 mos.
	20 mice	C57BL		0.01% in acetone soln. 3 times/wk	Skin	Tumors[2928]	20 at 6 mos	Up to 11 mos.
	20 mice	C57BL		0.005% in acetone soln. 3 times/wk	Skin	Tumors[2929]	19 at 8 mos	Up to 16 mos.
	20 mice	C57BL		0.001% in acetone soln. 3 times/wk	Skin	0	14 at 6 mos	Up to 11 mos.
	20 mice	C57BL		0.0005% in acetone soln. 3 times/wk	Skin	0	12 at 11 mos	Up to 21 mos.
	20 mice	C57BL		0.0001% in acetone soln. 3 times/wk	Skin	0	9 at 8 mos	Up to 16 mos.
	3 rabbits	New Zealand		0.5% in acetone soln. 5 times/wk	Skin of back & ears.	Tumors[2930]	2 at 12 mos	Up to 19 mos.
	3 rabbits	New Zealand		0.005% in acetone soln. 5 times/wk	Skin of back & ears.	Tumors[2931]	2 at 12 mos	Up to 24 mos.
	20 mice	Swiss		0.05% in acetone soln. 3 times/wk	Skin	Tumors[2932]	20 at 3 mos	Up to 6 mos.
	20 mice	Swiss		0.01% in acetonc soln. 3 times/wk	Skin	Tumors[2933]	19 at 6 mos	Up to 12 mos.
	20 mice	Swiss		0.005% in acetone soln. 3 times/wk	Skin	Tumors[2934]	13 at 9 mos	Up to 18 mos.
	20 mice	Swiss		0.001% in acetone soln. 3 times/wk	Skin	0	16 at 10 mos	Up to 20 mos.
Benko, A., et al., 1958	50 rats	Albino		(a) 0.1 mg. as a 1% soln. in helianthus oil, once [2936], (b) 0.2 ml. of a 0.09% soln., (c) inj. in the wall of the glandular stomach, (d) S.C.		11[2936]	8	504 d.

[2923] 18 papillomas, 19 carcinomas at 13 mos.
[2924] 19 papillomas, 17 carcinomas at 19 mos.
[2926] 6 papillomas, 2 carcinomas at 24 mos.
[2926] 16 papillomas, 8 carcinomas at 7 mos.
[2927] 14 papillomas, 12 carcinomas at 7 mos.
[2928] 16 papillomas, 15 carcinomas at 11 mos.
[2929] 19 papillomas, 15 carcinomas at 15 mos.
[2930] 3 with 50+dorsum papillomas, 50+otic papillomas; 2 dorsum carcinomas, 2 otic carcinomas.
[2931] 50+dorsum papillomas, 50+otic papillomas.
[2932] 16 papillomas, 19 carcinomas at 6 mos.
[2933] 17 papillomas, 17 carcinomas at 6 mos.
[2934] 11 papillomas, 11 carcinomas at 18 mos.
[2936] With physostigmin.
[2936] 2 forestomach carcinomas, 6 gastric sarcomas, 3 sarcomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
521. 3,4-BENZPYRENE (Continued)								
	50 rats	Albino	M & F	0.1 mg. as a 1% soln. in helianthus oil, inj.	Inj. in the wall of the glandular stomach.	12[2937]	8	504 d.
	50 rats	Albino	M & F	0.1 mg. as a 1% soln. in helianthus oil, once[2938], 0.2–0.1 ml. of a 1% soln., daily for 67 d., inj. in the wall of the glandular stomach.	S.C	5[2939]	7	504 d.
Gellhorn, A., 1958	529 mice	Swiss & Paris R111.		200 μg. as 1% soln. in acetone given once on 2 successive d.	Skin	Tumors[2940, 2941]	13 at 105 wks	65–105 wks.
	247 mice	Swiss & Paris R111.		200 μg. as 1% soln. in acetone given once on 2 successive d.[2942]	Skin	Tumors[2943, 2944]	1 at 105 wks	65–105 wks.
Koprowska, I., et al., 1958	30 mice [2945]	C3H	F	1% soln. in acetone applied twice wkly. for 19 wks.	Cervix	Tumors[2945]	18 died & 12 killed between 19–30 wks.	30 wks.
Modica, F., 1958	20 rats	Albino	M & F	1 ml. of a 0.5% soln. in mandorle oil, 3 times at 20 d. intervals.	S.C	All[2947]	Last animal died at 155 d.	Up to 155 d.
Nau, C. A., et al., 1958	18 mice	C3H brown		(Total dose of 26.04 mg. in water susp., 0.4 mg.: 1 g. respectively) thrice wkly. for 155 applications in 12 mos.	Skin, back	Tumors[2948, 2949, 2950]	9 killed, 9 died	12 mos.
	24 mice	C3H		300 mg. in 600 g. of "cooking oil", plus 31.68 mg. of benzene-226 application in 18 mos.	Skin	Tumors[2951]	11 killed, 12 died	18 mos.
Payne, S., 1958	40 mice	St. A	F	0.5 mg. as colloidal susp, in 2 cc. dist. water once wkly.	I.P	Tumors[2952]	Life, or till tumor appeared.	1 yr.
Payne, S., 1958	30 rats	Wistar	M	4 mg. as colloidal susp. in 4 cc. dist. water once.	I.P	Tumors[2953, 2954]	9 mos.–1 yr	1 yr.
	80 mice	St. A	40 M, 40 F	2 mg. as colloidal susp. in 2 cc. dist. water once.	I.P	Tumors[2955]	Life, or till tumor appeared.	1 yr.
	10 rats	Wistar	F	10 mg. as colloidal susp. in 4 cc. dist. water once.	I.P	Tumors[2956, 2957]	9 mos.–1 yr	1 yr.

[2937] 3 forestomach carcinomas, 6 gastric sarcomas, 2 bronchial adenomas, 1 hepatic sarcoma.
[2938] With atropine.
[2939] 2 forestomach carcinomas, 1 gastric sarcoma, 1 bronchial adenoma, 1 sarcoma.
[2940] 20 with papillomas, 2 with carcinomas, 3 with both.
[2941] Acetone controls (treated 5–6 day/wk.) negative.
[2942] 5–6 days/wk. application of 1 drop 0.5% croton oil in benzene for duration.
[2943] 95 with papillomas, 4 with carcinomas, 20 with both.
[2944] 4 croton oil controls with papillomas.
[2945] Age: 4–6 wks.
[2945] 100% invasive cervical and/or vaginal carcinoma.
[2947] 100% with injection site sarcomas, avg. latent period 101 days. Other groups received various doses of zymosan.
[2948] 5 with dermal squamous cell carcinoma, 1 with bronchogenic carcinoma.
[2949] 20 C3H water controls negative.
[2950] 943 untreated CFW and C3H developed 6 dermal, 6 hepatic, 1 splenic malignant neoplasm.
[2951] 8 squamous carcinoma, 1 pulmonary carcinoma (metastatic?).
[2952] 86% abdominal fibrosarcoma (some progressed to spindle cell sarcoma) avg. latent period 18 wks.
[2953] 1 abdominal fibrosarcoma, 3 interstitial cell adenomas. Possible adrenomedullary pheochromocytoma.
[2954] Untreated controls negative.
[2955] 73% of males, 81% of females with intra-abdominal fibrosarcoma (some progressed to spindle cell sarcoma). Avg. latent period 33 wks.
[2956] 2 mammary adenocarcinoma and 2 uterine adenocarcinoma. Relationship probable.
[2957] Controls negative for mammary tumors.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
521. 3,4-BENZPYRENE (Continued)								
Poel, W. E., et al., 1958	Mice	C57/Leaden, SWR, C57BL/6.		0.002–1.25% in toluene thrice wkly. till death or tumor development.	Skin	Tumors[2958, 2959]	Life	Life.
	Mice	BBF–1, C3H, DB/2.		0.002–1.25% in toluene A-He thrice wkly. till death or tumor development.	Skin	Tumors[2958, 2959]	Life	Life.
Scarpelli, D. G., and Von Haam, E., 1958.	5 mice	C3H	F	1% soln. in acetone twice wkly. for 32–50 wks.	Intravaginal painting.	Tumors[2960]		50 wks.
Von Haam, E., et al., 1958	24 mice	Swiss Albino		0.5% in acetone soln. twice wkly	Skin	Tumors[2961]	33–57% at 9 mos	9 mos.
Hieger, I., 1959	50 mice	Stock		10 μg. in 10% cholesterol: 90% olive oil once.	S.C	Tumors[2962]		
	50 mice	Stock		0.075 μg. in 10% cholesterol: 90% olive oil, divided into 6 doses.	S.C	Tumors[2963]		At least 1 yr.
	50 mice	Stock		5 μg. in 10% cholesterol: 90% olive oil, divided into 6 doses.	S.C	Tumors[2963]		
	50 mice	Stock		0.5 μg. in 10% cholesterol: 90% olive oil, divided into 6 doses.	S.C	0		
Hieger, I., 1959	50 mice	Stock		50 μg. in 10% cholesterol: 90% olive oil, divided into 6 doses.	S.C	Tumors[2964]		
	50 mice	C57		0.04 μg. in 10% cholesterol: 90% olive oil once.	S.C	0		
	50 mice	C57		0.4 μg. in 10% cholesterol: 90% in olive oil once.	S.C	Tumors[2965]		
	50 mice	C57		4.0 μg. in 10% cholesterol: 90% olive oil once.	S.C	Tumors[2966]		
	50 mice	C57		40.0 μg. in 10% cholesterol: 90% olive oil once.	S.C	Tumors[2967]		
	50 mice	Stock		7.5 μg. in 10% cholesterol: 90% olive oil, divided into 6 doses.	S.C	Tumors[2958]		At least 1 yr.
	50 mice	Stock		0.75 μg. in 10% cholesterol: 90% olive oil divided into 6 doses.	S.C	Tumors[2963]		At least 1 yr.
	50 mice	Stock		10 μg. in 10% cholesterol: 90% oli-e oil divided into 6 doses.	S.C	Tumors[2965]		
	50 mice	C57		10 μg. in 10% cholesterol: 90% olive oil divided into 6 doses.	S.C	Tumors[2969]		

[2958] Papillomas and suspect malignant tumors; same relative susceptibility in all strains.
[2959] Toluene treated controls negative.
[2960] 5 with cervical epidermoid carcinoma.
[2961] 96% carcinomas, first at 2 mos.
[2962] 6 sarcomas.
[2963] 3 sarcomas.
[2964] 19 sarcomas.
[2965] 1 sarcoma.
[2966] 5 sarcomas.
[2967] 23 sarcomas.
[2968] 2 sarcomas.
[2969] 10 sarcomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
521. 3,4-BENZPYRENE (Continued)								
Koprowska, I., and Bogacz, J., 1959.	30 mice	C3H	F	1% soln. in acetone twice wkly. for 19 wks.	Intravaginal, thru an otic speculum.	Tumors[2970, 2971].		30 wks.
	20 mice	C3H	F	1% soln. in acetone twice wkly. until killed.	Intravaginal thru an otic speculum.	Tumors[2971, 2972].	2 killed every other wk. after 3rd wk. of treatment.	21 wks.
Poel, W. E., 1959	55 mice	C57BL	M	0.38 μg. in toluene thrice wkly. until malignant tumor formation.	Skin	Tumors[2973, 2974].	Avg. 65 wks	103 wks.
	56 mice	C57BL	M	0.75 μg. in toluene thrice wkly. until malignant tumor formation.	Skin	Tumors[2974, 2975].	Avg. 5.6 wks	94 wks.
	49 mice	C57BL	M	3.8 μg. in toluene thrice wkly. until malignant tumor formation.	Skin	Tumors[2974, 2976].	Avg. 56 wks	82 wks.
	38 mice	C57BL	M	19.0 μg. in toluene thrice wkly. until malignant tumor formation.	Skin	Tumors[2974, 2977].	Avg. 39 wks	44 wks.
	35 mice	C57BL	M	94.0 μg. in toluene thrice wkly. until malignant tumor formation.	Skin	Tumors[2974, 2978].	Avg. 28 wks	43 wks.
	14 mice	C57BL	M	188.0 μg. in toluene thrice wkly. until until malignant tumor formation.	Skin	Tumors[2974, 2979].	1 died at 6 & 1 at 12 wks., avg. 21 wks.	35 wks.
	14 mice	C57BL	M	94 μg. in 1.25% soln. in toluene once.	Skin	0[2980, 2981]	14 at 20 wks	At least 20 wks.
	13 mice	C57BL	M	752 μg. in 1.25% soln. in toluene once.	Skin	Tumors[2981, 2982].	13 at 20 wks	At least 20 wks.
	4 mice	DBA/2	M	19 μg. in 0.25% soln. in toluene thrice wkly. for 7 wks.; 52 wks. interval, repeated treatment for 12, 17, 21 & 23 wks., respectively.	Skin	Tumors[2983]	71, 76, 80 & 82 wks.	82 wks.
	55 mice	C57BL	M	0.15 μg. in toluene thrice wkly. until malignant tumor formation.	Skin	5 paps.[2974]	Avg. 61 wks	98 wks.
	7 mice	DBA/2	M	19 μg. in 0.25% soln. in toluene thrice wkly. for 7 wks.	Skin	0		
	13 mice	C57BL	M	752.0 μg. in toluene thrice wkly. until malignant tumor formation.	Skin	Tumors[2974, 2984].	Avg. 23 wks	30 wks.
	14 mice	C57BL	M	376.0 μg. in toluene thrice wkly. until malignant tumor formation.	Skin	Tumors[2974, 2985].	Avg. 23 wks	35 wks.

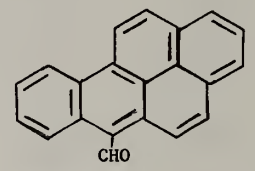
[2970] 100% with invasive uterine carcinoma at 19–30 wks.
[2971] 5 untreated controls negative at 58 wks.
[2972] Early cervical carcinoma, definite at 18 wks.
[2973] 9 with papillomas, at 69 wks. avg.; 2 with epidermoid carcinomas at 82 wks.
[2974] 33 toluene controls negative.
[2975] 3 with papillomas, at 57, 61, 64 wks., 4 with epidermoid carcinomas at 62 wks. avg.
[2976] 9 with papillomas at 46 wks. avg.; 32 with epidermoid carcinomas at 61 wks. avg.
[2977] 1 with papilloma at 25 wks. 37 with epidermoid carcinomas at 39 wks. avg.
[2978] 100% epidermoid carcinomas at 28 wks. avg.
[2979] 2 papillomas at 21 wks.; 10 with epidermoid carcinomas at 28 wks. avg.
[2980] 1 transient papilloma.
[2981] 7 toluene controls negative.
[2982] 2 transient papillomas, 1 epidermoid carcinoma.
[2983] 4/4 with epidermoid carcinomas. Papillomas at 13–24 wks.
[2984] 100% epidermoid carcinomas at 23 wks. avg.
[2985] 2 papillomas at 15 and 16 wks. 12 with epidermoid carcinomas at 23 wks. avg.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
				521. 3,4-BENZPYRENE (Continued)				
	11 mice	DBA/2	M	19 μg. in 0.25% soln. in toluene thrice wkly. for 60–100 exposures.	Skin	Tumors[2986]	11 at 20 wks	At least 20 wks.
	7 mice	DBA/2	M	19 μg. in 0.25% soln. in toluene thrice wkly. for 20 exposures.	Skin	0[2980]	7 at 20 wks	At least 20 wks.
	8 mice	Tumblebrook albino.	M	19 μg. in 0.25% soln. in toluene thrice wkly. for 72–117 exposures.	Skin	Tumors[2987]	8 at 20 wks	At least 20 wks.
	8 mice	Tumblebrook albino.	M	19 μg. in 0.25% soln. in toluene thrice wkly. for 20 exposures.	Skin	7 paps.[2988]	8 at 20 wks	At least 20 wks.
	8 mice	Tumblebrook albino.	M	19 μg. in 0.25% soln. in toluene thrice wkly. for 10 exposures.	Skin	5 paps.[2989]	8 at 20 wks	At least 20 wks.
	11 mice	C57BL	M	3008 μg. in 1.25% soln. in toluene once.	Skin	Tumors[2990]	11 at 20 wks	At least 20 wks.
	13 mice	C57L	M	376 μg. in 1.25% soln. in toluene once.	Skin	2 paps.[2980, 2981]	13 at 20 wks	At least 20 wks.
	11 mice	DBA/2	M	19 μg. in 0.25% soln. in toluene thrice wkly. for 7 wks., continued thereafter until malignant tumor formation 13–27 wks.,	Skin	Tumors[2991]	11 at 13 wks	At least 34 wks.
	14 mice	C57L	M	188 μg. in 1.25% soln. in toluene once.	Skin	0[2980,2981]	14 at 20 wks	At least 20 wks.
	8 mice	DBA/2, Tumblebrook albino.	M	19 μg in 0.25% soln. in toluene once.	Skin	0		At least 20 wks.
Wynder, E. L., and Hoffmann, D., 1959.	20 mice	Swiss	F	0.01% soln. in acetone thrice wkly	Skin	Tumors[2992]	1 at 11 mos	Less than 1 yr.
Wynder, E. L., and Hoffmann, D., 1959.	20 mice	Swiss	F	0.05% soln. in acetone thrice wkly	Skin	Tumors[2993]	13 at 5 mos	Less than 6 mos.
	20 mice	Swiss	F	0.5% soln. in acetone thrice wkly	Skin	Tumors[2994]	8 at 5 mos	Less than 6 mos.
Mody, J. K., 1960	53 mice	IF	F	1 ml. (8 drops per side) of 0.5% soln. in arachis oil for (4) fortnightly applications.	Skin, dorsal & ventral surfaces.	Tumors[2995]	17 killed up to 15 wks., 31 killed between 16–51 wks.	70 wks.
Payne, W. W., 1960	52 mice	C57BL	26 F & M	0.05 mg. in 0.2 ml. tricaprylin once	S.C., neck	Tumors[2996, 2997]		Up to 22 mos.

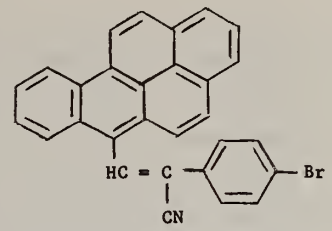
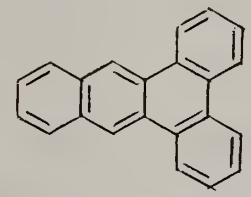
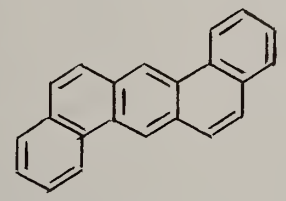
[2980] 1 transient papilloma.
[2981] 7 toluene controls negative.
[2986] Papillomas. 11 epidermoid carcinomas.
[2987] Papillomas. 8 epidermoid carcinomas.
[2988] 5 transient.
[2989] 3 transient.
[2990] 4 papillomas (3 transient), 1 epidermoid carcinoma. 7 toluene controls negative.
[2991] 11/11 with epidermoid carcinomas. Papillomas at 13–28 wks.
[2992] 85% papillomas and 85% dermal carcinomas.
[2993] 70% papillomas and 95% carcinomas.
[2994] 75% papillomas and 75% dermal carcinomas.
[2995] 2 ovarian granulosa cell tumors, 1 luteinized granulosa cell tumor, 1 luteoma.
[2996] 19 injection site spindle cell sarcomas.
[2997] 52 tricaprylin controls negative.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
521. 3,4-BENZPYRENE (Continued)								
Della Porta, G., et al., 1960	40 mice	Swiss albino	20 āā	50 μg. in acetone once[2998]	Skin	Tumors[2999]	10 F & 3 M at 60 wks.	60 wks.
Della Porta, G., et al., 1960	22 mice	Swiss albino	–F	50 μg. in 50 μl. acetone once	Skin	0	19 at 50 wks. & 1 at 90 wks.	90 wks.
Shubik, P., et al., 1960	30 hamsters	Syrian golden	15 āā	4 drops of 0.8% soln. in mineral oil once wkly. for 3 wks., interval of 30 wks., given again for 5 wks.	Skin	Tumors[3000]	14 F, 12 M at 33 wks., 1 F at 68 wks., 1 M at 99 wks.	99 wks.
	10 hamsters	Syrian golden	5 āā	6 drops of 0.01% soln. in acetone twice wkly. for 40 wks.	Skin	Tumors[3002]	100% at 50 wks., 3 F, 4 M at 70 wks.	At least 70 wks.
Stein-Werblowsky, R., 1960	60 rats	Wistar	F	1% in acetone daily [3003] till death, 14 to 118 paintings.	Vagina	Tumors[3004]	Life of animal	
	60 rats	Wistar	F	1% in acetone daily[3003] till death, 14 to 118 paintings.	Vagina	Tumors[3004]	Life of animal	
Wynder, E. L., et al., 1960	20 mice	Swiss		0.1 cc. of 0.005% acetone soln. thrice wkly. for 12 mos.	Skin	Tumors[3005]	1 at 14 mos	Up to 15 mos.
	20 mice	Swiss		0.1 cc. of 0.005% acetone soln. thrice wkly. for 9 mos.	Skin	Tumors[3006]	2 at 16 mos	Up to 17 mos.
	20 mice	Swiss		0.1 cc. of 0.005% acetone soln. thrice wkly. for 6 mos.	Skin	Tumors[3007]	2 at 17 mos	Up to 17 mos.
	20 mice	Swiss		0.1 cc. of 0.005% acetone soln. thrice wkly. for 3 mos.	Skin	Tumors[3008]	3 at 17 mos	Up to 17 mos.
	20 mice	Swiss		0.1 cc. of 0.005% solu. thrice wkly. with a 2 wk. interval of nonpainting up to 12 mos.	Skin	Tumors[3009]	3 at 17 mos	Up to 17 mos.
	20 mice	Swiss		0.1 cc. of 0.005% acetone soln. five times a wk. for life span of animal.	Skin	Tumors[3010]	3 at 11 wks	Up to 12 wks.
	20 mice	Swiss		0.1 cc. of 0.005% acetone soln. thrice wkly. for life span of animal.	Skin	Tumors[3011]	1 at 15 wks	Up to 16 wks.
	20 mice	Swiss		0.1 cc. of 0.005% acetone soln. twice a wk. for life span of animal.	Skin	Tumors[3012]	4 at 15 wks	At least 16 wks.
	20 mice	Swiss		0.1 cc. of 0.005% acetone soln. once a wk. for life span of animal.	Skin	Tumors[3013]	6 at 17 mos	Up to 17 mos.

[2998] Daily (5–6/wk. for 50 wks.) skin applications of 60 mg. Tween 60 begun 1 wk. later.
[2999] 11 females with 33 benign dermal tumors (25 regressed); 2 squamous cell carcinomas. 10 males with 30 dermal tumors (24 regressed).
[3000] 1 male with melanoma.
[3001] 2 malignant lymphomas in male (1 dermal-nodal).
[3002] 1 female with hepatoma and thyroid adenoma.
[3003] In estrus cycle.
[3004] 2 mammary adenofibroma.
[3005] 16 papillomas, 13 carcinomas.
[3006] 15 papillomas, 14 carcinomas.
[3007] 13 papillomas, 9 carcinomas.
[3008] 3 papillomas, 4 carcinomas.
[3009] 16 papillomas, 11 carcinomas.
[3010] 18 papillomas, 17 carcinomas.
[3011] 18 papillomas, 14 carcinomas.
[3012] 15 papillomas, 11 carcinomas.
[3013] 4 papillomas, 4 carcinomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
521. 3,4-BENZPYRENE (Continued)								
	20 mice	Swiss		0.1 cc. of 0.005% soln. thrice wkly. with 4 wk. intervals of nonpainting up to 12 mos.	Skin	Tumors[3014]	4 at 16 mos	Up to 17 mos.
Peirce, W. E. H., 1961	20 mice	Stock	F	12.5 μgm in 0.25 ml. polyethylene glycol given once.[3015]	P.O., stomach tube.	Tumors[3015, 3017].	9 from 50–280 d	Survivors still under observation.
	20 mice	Stock	F	50 μgm in 0.25 ml. polyethylene glycol given once.	P.O., stomach tube.	0	9 from 50–280 d	Survivors still under observation.
	20 mice	Stock	F	50 μgm in 0.25 ml. polyethylene glycol given once.[3015]	P.O., stomach tube.	Tumors[3017, 3018].	9 from 50–280 d	Survivors still under observation.
	20 mice	Stock	F	200 μgm in 0.25 ml. polyethylene glycol given once.	P.O., stomach tube.	Tumors[3017, 3019].	11 from 50–280 d	Survivors still under observation.
	20 mice	Stock	F	12.5 μgm in 0.25 ml. polyethylene glycol given once.	P.O., stomach tube.	Tumors[3017, 3020].	10 from 50–280 d	Survivors still under observation.
	20 mice	Stock	F	200 μgm in 0.25 ml. polyethylene glycol given once.[3015]	P.O., stomach tube.	Tumors[3017, 3021].	11 from 50–280 d	Survivors still under observation.
522. 3,4-BENZPYRENE-5-ALDEHYDE 								
Lacassagne, A., et al., 1957	Mice (10–9 mos. old).	XVII		5 mg. pellet	S.C	4 sarc		
Lacassagne, A., et al., 1957	Mice (10–9 mos. old).	XVII		5 mg. pellet	S.C	3 sarc		

[3014] 11 papillomas, 7 carcinomas.
[3015] 40 weekly administrations of 0.05 ml. lime oil begun 3 wks. later.
[3016] 2 with benign forestomach tumors.
[3017] 20 untreated controls negative.
[3018] 8 with 20 benign forestomach tumors.
[3019] 5 with 14 benign forestomach tumors.
[3020] 2 with benign forestomach tumors.
[3021] 10 with 38 forestomach tumors; 37 benign, 1 invasive squamous carcinoma.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
523. 5(α-CYANO-p-BROMOSTYRYL)-3,4-BENZPYRENE 								
Lacassagne, A., 1957	10–9 mos. old mice.	XVII		5 mg. pellet	S.C	0		13 mos.
	10–9 mos. old mice.	XVII		5 mg. pellet	S.C	0		13 mos.
	10–9 mos. old mice.	XVII		5 mg. pellet	S.C	0		13 mos.
524. 1,2,3,4-DIBENZANTHRACENE 								
Orr, J. W., 1956	Mice	1 F			Skin	0		
525. DIBENZANTHRACENE 								
Benko, A., et al., 1953	2 mice		M & F	In olive oil 5% twice a wk., total dose 90%	I.P			42 d.
	6 mice		M & F	In olive oil 5% daily painting	Skin			190 d.
Deringer, M. K., and Heston, W. E., 1953.	50 mice	(SWR x BL) F_1	25 F & M	0.5 mg	I.V	Tumors[3022]	All sacrificed	6 mos.

[3022] 100% with multiple pulmonary nodules.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
525. DIBENZANTHRACENE (Continued)								
	50 mice	(A x BL) F_1	25 F & M	0.5 mg	I.V	Tumors[3022]	All sacrificed	6 mos.
	50 mice	BL	25 F & M	0.5 mg	I.V	Tumors[3022]	All sacrificed	6 mos.
	50 mice	A	25 F & M	0.5 mg	I.V	Tumors[3022]	All sacrificed	6 mos.
	50 mice	SWR	25 F & M	0.5 mg	I.V	Tumors[3022]	All sacrificed	6 mos.
	50 mice	(A x SWR) F_1	25 āā	0.5 mg	I.V	Tumors[3022]	All sacrificed	6 mos.
Kocke, H. U., 1953	11 mice	Albino		1 mg. in 4% agar (8 mm.[3])	S.C. implant	0	4 at 130 d	0.
Pollard and Bussell, 1954	28 to 30 mice	C3H		0.5 mg. in cooking oil	S.C	Sarc		Over 12 wks.
	28 to 30 mice[47].	C3H		0.5 mg. susp. in cooking oil, 2 biwkly. injs.	S.C	Tumors[3023]		12 wks.
Berenblum & Haran, 1955	34 mice	Swiss	M	0.3 ml. of 0.5% DBA in PEG solvent, once.[3024,2827]	P.O., stomach tube.	7 paps. of fore-stomach.	21 at 10 wks	30 wks.
	22 mice	Swiss	M	0.3 ml. of 0.5% DBA in PEG solvent, once.[2835]	P.O. stomach tube.	0	All alive at 10 wks.	20 wks.
	20 mice	Swiss	M	0.3 ml. of 0.5% DBA in PEG solvent, once.[2833,2827]	P.O., stomach tube.	2 paps. of fore-stomach.	18 at 10 wks	30 wks.
	22 mice	Swiss	M	1 dose of 0.3 ml. of 0.5% carcinogen in polyethylene glycol-400.[2831]	P.O., stomach tube.	0	21 at 20 wks	30 wks.
Caputo, A., and Giovanella, B., 1955.	38 rats	Wistar	M & F	Fibrin sponge impregnated with a 10% soln.	Intra-cerebrum	3[3025]		At least 120 d.
Steiner, 1955	Mice	C57BL	M & F	0.04 mg. in tricaprylin	S.C., inter-scapular region.	6 sarc. (33%).	18 at 150 d	22–28 mos.
	Mice	C57BL	M & F	0.02 mg. in tricaprylin	S.C., inter-scapular region.	7 sarc. (33%).	21 at 160 d	22–28 mos.
Telford, I. R., 1955	41 mice	A	M & F	One inj. of 1 mg. in 0.25 cc. warm (40° C) olive oil. Then maintained on a vitamin E deficient diet.	S.C. (dorsal scapular region).	Tumors[3026]	All sacrificed between the 5th-19th wks.	19 wks.
	26 mice	A	M & F	One inj. of 1 mg. in 0.25 cc. warm (40° C) olive oil. Then maintained on a normal commercial diet.	S.C. (dorsal scapular region).	Tumors[3027]	All sacrificed between the 5th-19th wks.	19 wks.

[3] Size .05–1.0μ.
[47] Young.
[2827] Milk only for 3 days, water only for 18 hrs. before treatment. Water only for 18 hrs. before secondary treatment.
[2831] Milk only for 3 days before treatment.
[2835] Milk only for 3 days, water only for 18 hrs. before treatment.
[3022] 100% with multiple pulmonary nodules.
[3023] Injection site fibrosarcomas.
[3024] 30 weekly doses (.3 ml) of 3% croton oil in PEG after treatment.
[3025] Histological study of induced cerebral tumors.
[3026] 100% with pulmonary tumors, avg. 75.6/animal.
[3027] 100% with pulmonary tumors, avg. 72.1/animal.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
525. DIBENZANTHRACENE (Continued)								
Heston, W. E., and Pratt, A. W., 1956.	60 mice	A	40 M, 20 F	0.1 mg. dispersed in 0.25 cc. water once, immediately exposed to 100% oxygen for 48 hrs.	I.V. (tail vein)	Tumors[3028]	60 at 4 mos	4 mos.
	56 mice	A	39 M, 17 F	0.1 mg. dispersed in 0.25 cc. water once.	I.V. (tail vein)	Tumors[3029]	56 at 4 mos	4 mos.
Kotin, P., et al., 1956	30 mice[1019]	C57	M	30 μg. in ethyllaurate soln	S.C	Tumors[3030]	29 at 19 wks	12 mos.
Kuschner, M., et al., 1956	Rats			Unspecified amt. in pellet	Implanted in bronchi.	0[3031]		Still in progress.
	64 mice			DBA-impregnated thread implanted in lung thru incision down to parietal pleura.	Lung transfixion.	Tumors[3032]		At least 228 d.
	Rats			DBA-impregnated thread implanted in lung, thru thoracotomy, for 91 days.	Lung transfixion.	0[3033]		Still in progress.
Orr, J. W., 1956	10 mice	1 F			Skin	Tumors[3034]		
Vaczy, L., et al., 1956	20 mice	Albino	F	15 mg. dissolved in 0.5 ml. lard once	S.C. back	Tumors[3035, 3036]	Killed from 5–9 mos.	9 mos.
	15 mice	Albino	M	15 mg. dissolved in 0.5 ml. lard once	S.C. back	Tumors[3037]		9 mos.
	20 mice	Albino	F	15 mg. dissolved in 0.5 ml. lard once.[3038]	S.C. back	Tumors[3036, 3039]	Killed from 5–9 mos.	9 mos.
	15 mice[198]	Albino	M	15 mg. dissolved in 0.5 ml. lard once	S.C. back	Tumors[3040]		9 mos.
	20 mice[198]	Albino	F	15 mg. dissolved in 0.5 ml. lard once.[3041]	S.C. back	Tumors[3036, 3042]	Killed from 5–9 mos.	9 mos.
	15 mice[198]	Albino	M	15 mg. dissolved in 0.5 ml. lard once.[3043]	S.C. back	Tumors[3044]		9 mos.
	15 mice	Albino	M	15 mg. dissolved in 0.5 ml. lard once.[3043]	S.C. back	Tumors[3045]		9 mos.
Vaczy, L., 1956	20 mice[198, 3045]	Albino	F	15 mg. dissolved in 0.5 ml. of lard, fed standard diet.	S.C. back	Tumors[3047]		9 mos.

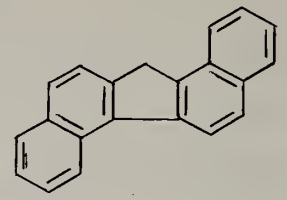
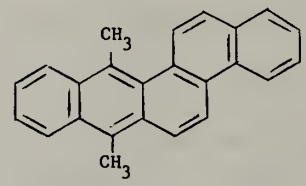
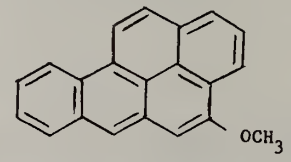
[198] Castrated.
[1019] Age: 3–4 months.
[3028] Avg. 34.72 pulmonary adenomas/mouse.
[3029] Avg. 24.27 pulmonary adenomas/mouse.
[3030] 7 S.C. spindle cell sarcomas at 19–43 wks.
[3031] Negative at 30 wks.
[3032] 32.8% pulmonary squamous cell carcinomas (some metastases) at 228 days avg. 15.6% S.C. pulmonary invasive fibrosarcomas at 169 days avg. 14.0% pulmonary adenomas at 215 days avg.
[3033] Negative at 91 days.
[3034] 2 mammary tumors.
[3035] 5 fibrosarcomas (some metastatic), first at 7 mos.
[3036] 20 lard injected controls negative.
[3037] 6 fibrosarcomas.
[3038] 7 doses 0.5 μgm. estrogen at 48 hr. intervals before treatment, continued for 6 wks. after treatment.
[3039] 12 fibrosarcomas, (some metastases). First at 5 mos.
[3040] 5 fibrosarcomas.
[3041] 7 doses 0.5 μgm estrogen at 48 hr. intervals before treatment, continued for 6 wks. after treatment.
[3042] 14 fibrosarcomas, (some metastases). First at 5 mos.
[3043] 4 doses 0.5 μgm testosterone at 48 hr. intervals before treatment, continued for 6 wks. after treatment.
[3044] 4 fibrosarcomas.
[3045] 3 fibrosarcomas.
[3046] Mature.
[3047] 10 malignant tumors; 3 at 5 mos., 1 at 6 mos., 2 at 7 mos., 2 at 8 mos., 2 at 9 mos.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
525. DIBENZANTHRACENE (Continued)								
	20 mice[3046]	Albino	F	15 mg. dissolved in 0.5 ml. of lard, fed standard diet.	S.C. back	Tumors[3048]		9 mos.
	15 mice[198, 3046]	Albino	M	15 mg. dissolved in 0.5 ml. of lard, fed standard diet.	S.C. back	Tumors[3049]		
	15 mice[3046]	Albino	M	15 mg. dissolved in 0.5 ml. lard, fed standard diet.	S.C. back	Tumors[3050]		
	10 mice[3046]	Albino	F	15 mg. dissolved in 0.5 ml. lard, fed standard diet.	S.C. back	Tumors[3051]	Sacrificed between 5–9 mos.	9 mos.
	20 mice[198]	Albino	F	15 mg. dissolved in 0.5 ml. lard once	S.C. back	Tumors[3052, 3063]	Killed from 5–9 mos.	9 mos.
	10 mice[198, 3046]	Albino	F	15 mg. dissolved in 0.5 ml. lard, fed standard diet.	S.C. back	Tumors[3061]	Sacrificed between 5–9 mos.	9 mos.
Allen, M. J., et al., 1957	20 mice			1 part/4 parts cholesterol in 9–11 mg. pellet implant.	Urinary bladder	Tumors[3064, 3055]	11 at 40 wks	At least 40 wks.
	20 mice			1 part/4 parts cholesterol in 9–11 mg. pellet implant.	Urinary bladder	0[3065, 3066]	12 at 40 wks	At least 40 wks.
Berenblum, I., and Haran-Ghera, N., 1957.	Mice	Swiss	F	0.3 ml. of 1.0% soln. in polyethylene glycol-400 once.[3057]	P.O., stomach tube.	Tumors[3058]	23 at end of experiment.	At least 32 wks.
Cuendet, J. F., et al., 1957	2 rabbits			290 μg. (0.1 ml.) in oil to the choroid coat of the eye.	Orbital vein	0		5 mos.
	1 rabbit			21 μg. to the choroid coat of the eye	Orbital vein	0		7 mos.
	2 rabbits			30 μg. to the choroid coat of the eye	Orbital vein	0	1 died at 7 wks	8 mos.
	1 rabbit			18 μg. to the choroid coat of the eye	Orbital vein	0		8 mos.
	1 rabbit			6 μg. to the choroid coat of the eye	Orbital vein	0	2	2½ mos.
Fleming, H. S., 1957	Rabbits			Tooth germs[3059] treated with unspecified amts. of crystals mixed with sterile agar, 4–407 d.	Homo & hetero-transplants to eyes & brain.	0[3060]	Many brain transplant animals died 24–48 hrs. after treatment.	To 407 d.
	Mice	DBA		Tooth germs[3059] treated with unspecified amt. of crystals mixed with sterile agar, 4–407 d.	Homo & hetero-transplants to axillae & brains.	0[3060]	Many brain transplant animals died 24–48 hrs. after treatment.	Up to 407 d.

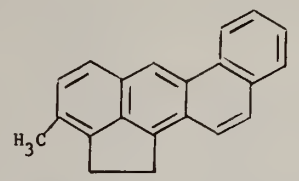
[198] Castrated.
[3046] Mature.
[3048] 5 malignant tumors; 1 at 7 mos., 1 at 8 mos., 3 at 9 mos.
[3049] 5 malignant tumors.
[3050] 6 malignant tumors.
[3051] 2 fibrosarcomas; 1st at 5–6 mos.
[3052] 10 fibrosarcomas (some metastases) 1st at 5 mos.
[3053] 20 lard injected non-castrated controls negative.
[3054] 4 with urinary cystic carcinoma.
[3055] 1/24 cholesterol controls with carcinoma.
[3056] 1 urinary cystic papilloma or adenoma.
[3057] 64 semi-weekly applications of 5% croton oil in paraffin followed treatment.
[3058] 12 with papillomas; avg. 0.8/mouse. 2/21 croton oil controls with papillomas; avg. 0.09/mouse.
[3059] From guinea pigs, rabbits, DBA embryos.
[3060] Hemorrhagic lesions of brain; hepatic and renal abscesses; atypical pulmonary and hepatic cells. Untreated brain transplant controls negative.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
525. DIBENZANTHRACENE (Continued)								
	Guinea pigs			Tooth germs[3059] treated with unspecified amt. of crystals mixed with sterile agar, 4–407 d.	Homo & heterotransplants to eyes & brains.	0[3060]	Many brain transplant animals died 24–48 hrs. after treatment.	To 407 d.
Hine, C. H., et al., 1958	30 rats	Long-Evans	M	In propylene glycol, 3 injs., 1 a wk	Inj., neck	Tumors[3061]	4 at 24 mos	24 mos.
Heston, W. E., and Pratt, A. W., 1959.	101 mice	A	63 M, 38 F	0.1 cc. of 0.1 mg., then exposed to 8% oxygen for 48 hrs.	I.V.	Tumors[3062, 3063]	Killed at 4 mos	4 mos.
	59 mice	A	24 M, 35 F	0.1 cc. of 0.1 mg., 48 hrs. prior to treatment animals were exposed to 100% oxygen for 48 hrs.	I.V.	Tumors[3064]	Killed at 4 mos	4 mos.
	60 mice	A	24 M, 36 F	0.1 cc. of 0.1 mg., prior to treatment animals were exposed to 100% oxygen for 48 hrs.	I.V.	Tumors[3065]	Killed at 4 mos	4 mos.
	58 mice	A	23 M, 35 F	0.1 cc. of 0.1 mg., 48 hrs. later exposed to 100% oxygen for 48 hrs.	I.V.	Tumors[3066]	Killed at 4 mos	4 mos.
	85 mice	A	48 M, 37 F	0.1 cc. of 0.1 mg., 30 min. later exposed to 100% oxygen for 48 hrs.	I.V.	Tumors[3067, 3068]	Killed at 4 mos	4 mos.
	61 mice	A	24 M, 37 F	0.1 cc. of 0.1 mg	I.V.	Tumors[3069]	Killed at 4 mos	4 mos.
Klein, M., 1960	Mice	Swiss albino	M	0.2 ml. of 0.00008% soln. in acetone once.[3070]	Skin	Tumors[3071, 3072]	Sacrificed during last 4–6 wks.	Up to 224 d.
	Mice	Swiss albino	M	0.2 ml. of 0.00001% soln. in acetone once.[3070]	Skin	Tumors[3072, 3073]	Sacrificed during last 4–6 wks.	Up to 224 d.
Mody, J. K., 1960	60 Mice	IF	F	1 ml. (8 drops per side) of 0.5% soln. in arachis oil for (4) fortnightly applications.	Skin, dorsal & ventral surfaces.	0	17 killed up to 15 wks., 36 killed between 16–51 wks.	70 wks.
Prehn, R. T., 1960	Mice	C3H/He or BALB/CAN.	M & F	Glycerol-moistened crystals	S.C. implant	Fibrosarcomas.[3074]		Till tumor formation.
Shubik, P., et al., 1960	10 hamsters	Syrian golden	5 āā	8 drops of 0.2% soln. in mineral oil twice wkly. for 10 wks.	Skin	0	2 F, 3 M at 50 wks., 1 F, 1 M at 75 wks.	75 wks.

[3059] From guinea pigs, rabbits, DBA embryos.
[3060] Hemorrhagic lesions of brain; hepatic and renal abscesses; atypical pulmonary and hepatic cells. Untreated brain transplant controls negative.
[3061] 8 fibrosarcomas, 6 sarcomas, 3 malignant injection site tumors (2 with pulmonary metastases). Propylene glycol controls negative.
[3062] Avg. 10.53 pulmonary tumors.
[3063] 92 air-chamber controls with avg. 11.76 pulmonary tumors. 102 room controls with avg. 12.15 pulmonary tumors.
[3064] Avg. 12.4 pulmonary tumors.
[3065] Avg. 11.6 pulmonary tumors. 1 para-salivary myoepithelioma.
[3066] Avg. 15.0 pulmonary tumors.
[3067] Avg. 14.29 pulmonary tumors.
[3068] 88 air-chamber controls with avg. 9.93 pulmonary tumors. 86 room controls with avg. 10.56 pulmonary tumors.
[3069] Avg. 12.2 pulmonary tumors.
[3070] 25 weekly applications of 1% solution croton oil in acetone begun 2 weeks later.
[3071] 14 (38%) with dermal tumors; avg. 0.9/mouse.
[3072] 4 (13%) acetone and croton oil controls with dermal tumors.
[3073] 10 (33%) with dermal tumors; avg. 0.5/mouse.
[3074] Tumor immunology study.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
526. 1,2,5,6-DIBENZFLUORENE 								
Orr, J. W., 1956	Mice	1 F			Skin	0		
	Mice	1 F			Skin	0		
528. 9,10-DIMETHYL-1,2-(α,β)NAPHTHANTHRACENE 								
de Clercq, M., et al., 1954	20 mice	XVII		3 times 1 mg. in peanut oil at 1 mo. intervals.	S.C	0		300 d.
	20 mice	XVII		0.3% in acetone or benzene 2 times a wk.	Nape of neck	0		300 d.
529. 7-METHOXY-3,4-BENZPYRENE 								
Schoental, R., and Head, M. A., 1955.	15 mice	Mixed	5 M, 10 F	0.5 mg. in 0.1 ml. tricaprylin once.[3080]	S.C	Tumors[3081]		At least 14 mos.

[3075] Age: under 12 hours.
[3076] 8 (32%) with malignant lymphoma at 11–24 weeks.
[3077] Colloid controls negative.
[3078] 8 with 27 benign forestomach tumors.
[3079] 20 untreated controls negative.
[3080] Compound may be 6-methoxy-3:4-benzpyrene.
[3081] 3 spindle cell sarcomas; 1 injection site sarcoma; 1 pulmonary adenoma; 1 thymic tumor; 1 lymphomatosis. (Pulmonary adenomas comparable to controls.)

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE 								
Petrov, N. N., et al., 1952	1 monkey			100 mg. inj. mammary glands	Mammary glands.	0	3 mos	3 mos.
	1 monkey			77 mg. inj	Mammary glands.	0	2½ yrs	2½ yrs.
	1 monkey			75 mg. inj	Mammary glands.	0	4 yrs	4 yrs.
	1 monkey			70 mg. inj	Mammary glands.	0	3 yrs	3 yrs.
	1 monkey			78 mg. inj	Mammary glands.	0	5 yrs	5 yrs.
	Monkeys	Rhesus	F	30–50 mg. paraffin pellet	Marrow of tibia, inj.	Tumors[3082]		More than 6 yrs.
Pezzoli, A., and Reggiani, E., 1952.	5 pigeons			5 mg. as 0.5% soln. in almond oil, 3 inj. 20 d. apart.	I.M	Tumors[3083]		480 d.
				5 mg. as 0.5% soln. in almond oil, 6 inj. 20 d. apart, repeated 3 mos. later.		0	Sacrificed at 6 mos.	6 mos.
Stanbury, J. B., 1952	Rats[3084]			As crystals, direct implant	Thyroid	([3085])		
Vaccari, R., 1952	40 mice			0.3% in benzene, 1 drop thrice wkly., 20 mice recd. in addition 10 u. of Vit. D_2 in the diet.	Skin	Tumors[3086]		
	40 mice			0.03% in benzene, 1 drop thrice wkly. for 2 wks. followed in 20 mice by a soln. of Vit. D_2 in olive oil.	Skin	0		6 mos.
Deringer, M. K., et al., 1953	51 mice	ST	25 M, 26 F	0.2 mg. dispersed in 0.2 cc. of horse serum.	I.V	Tumors[3087]		
	58 mice	ST	28 M, 30 F	0.5 mg. dispersed in 0.5 cc. of horse serum.	I.V	Tumors[3088]		About 9 mos.

[3082] Tibial osteogenic sarcoma at 3½ years.
[3083] 100% with spindle cell sarcoma; avg. latent period 294 days.
[3084] Iodine deficient.
[3085] No report.
[3086] 1 group with 80%, 1 with 84% epitheliomas.
[3087] 2 male, 8 female controls with pulmonary tumors. 2/91 virgins and 6/103 breeders with pulmonary tumors.
[3088] 13 males, 22 females with pulmonary tumors. 1 male, 1 female with leukemia. Comparable to controls. 2/91 virgins, 6/103 breeders with pulmonary tumors.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE (Continued)								
	91 mice	ST	40 M, 51 F	2 mg. dispersed in 0.2 cc. dist. water containing 0.1% methocel & 0.01% aerosol.	I.V.	Tumors[3089]	40 died during experiment.	About 8 mos.
Klein, M., 1953	25 mice	C57 Brown		0.5% soln. in olive oil once[3090]	Skin	Tumors[3091]	21 at time of first tumor.	About 35 wks.
	25 mice	C57 Brown		0.5% soln. in olive oil once	Skin	Tumors[3092]	24 at time of first tumor.	At least 220 d.
Kocke, H. U., 1953	10 mice (15–20 g.).	Albino		0.2 ml. of a 1% soln. in olive oil (2 mg.).	S.C.	Tumors[3093]	3 at 85 d	
	44 mice (15–20 g.).	Albino		1 mg. in 4% agar (8 mm.^{3})	S.C. implant	Tumors[3094]		188 d.
Miyaji, T., et al., 1953	20 rats	Sprague-Dawley.	10 M, 10 F	0.005% in diet for 10 wks	P.O.	0		25 wks.
Pezzoli, A., 1953	5 pigeons			5 mg. as 0.5% soln. in almond oil, three times 20 d. apart.	I.M.	Tumors[3095]		At least 416 d.
Pizzetti, F., et al., 1953	Mice			Three applications of 0.3% soln. in acetone followed by croton oil 5% in olive oil.	Skin	Tumors[3096]		At least 8½ mos.
Pollard, M., and Bussell, R. H., 1953.	Mice	C3H		0.5 mg. in cooking oil	S.C.	Sarcomas		About 3½ mos.
Rigdon, R. H., 1953	Ducks	White-Pekin		0.5–2.0 cc. of 0.25% acetone soln. for 30 d.[3097]	Skin	Tumors[3098]		At least 30 d.
Vangelisto, G., 1953	5 rats	Albino	M	1 ml. of 0.5% soln. in oil	S.C.	5[3099]		At least 215 d.
Baserga and Shubik, 1954	38 mice	Swiss	M & F	2 mg. in 0.3 cc. of tricaprylin one inj. [3100]	S.C.	28 sarc.		Over 5 mos.
	53 mice	Swiss		0.3% in acetone twice wkly. 38 applications.[3101]	Skin	62 pap. 29 epi.[3102]	Cortisone treated 12 at 13 wks., non-cortisone treated 31 at 19 wks.	19 wks.
Bauer and Grand, 1954	27 mice	Swiss	M & F	2 pellets (0.3 mg. each) in beeswax containing 20%.	Implanted into salivary glands bilaterally.	Tumors[3103]		205 d.

[3089] 17 males, 21 females with pulmonary tumors; 2 females with mammary tumors; 3 females with leukemia. Comparable to controls. 2/91 virgins, 6/103 breeders with pulmonary tumors.
[3090] 50 semi-weekly applications of 5% croton oil begun 2 weeks later.
[3091] 14 (67%) with benign dermal tumors.
[3092] 5 (21%) with benign dermal tumors.
[3093] 3 sarcomas.
[3094] 1 papilloma, 5 carcinomas, 14 sarcomas.
[3095] 100% with spindle cell sarcoma; avg. latent period 280 days.
[3096] Coexistent squamous cell carcinoma-fibrosarcoma. Epithelial tumors described in previous report.
[3097] Feathers plucked during and after application.
[3098] 6 with follicular fibroid tumors.
[3099] Injection site sarcomas.
[3100] 12 with tumors, cortisone treated (5 with metastases). No metastases in other tumor bearers.
[3101] 16 treated with cortisone until end.
[3102] 1 of cortisone treated group with 1 papilloma.
[3103] Salivary gland undifferentiated carcinomas and adenoacanthomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE (Continued)								
	120 mice	C	M & F	2 pellets (0.3 mg. each) in beeswax containing 20%.[3104]	Implanted into salivary glands bilaterally.	Tumors[3104]		195 d.
Bonser, G. M., 1954	10 mice[3105]	IF	F	10 mg. paraffin pellet with 0.2 mg. MCA (left "in situ" for 16 wks.).[3105]	S.C., r. groin (4th breast).	3 (sarc. at implant site).	5 alive at 32 wks	More than 72 wks.
	9 mice[3105]	IF	F	10 mg. paraffin pellet with 0.2 mg. MCA (left "in situ" for 8 wks.).[3107]	S.C., r. groin (4th breast).	2 (sarc. at implant site).[3108]	6 alive at 48 d	Approx. 72 wks.
	12 mice[3109]	IF	F	10 mg. pellet with 0.2 mg. MCA (left "in situ" for 16 wks.).	S.C., r. groin (4th breast).	9 (6 carc., 3 carcinosarc. at implant site).[3110]	5 alive at 32 wks	Approx. 64 wks.
	10 mice[3109]	IF	F	10 mg. pellet with 0.2 mg. MCA (left "in situ" for 12 wks.).	S.C., r. groin (4th breast).	3 (2 carc., 1 sarc., at implant site).	7 alive at 56 wks	More than 72 wks.
	23 mice[3109]	IF	F	2 paraffin wax pellets (10 mg.), 1 with 0.2 mg. MCA & 1 with 0.1 mg. MCA.	S.C., r. & l. groin (4th breast).[3111]	Tumors[3112]	14 alive at 32 wks	More than 72 wks.
	9 mice[3109]	IF	F	10 mg. pellet with 0.2 mg. MCA (left "in situ" for 4 wks.).	S.C., r. groin (4th breast).	1 (carcinosarc. at implant site).	All but 2 alive until end of experiment.	More than 72 wks.
	10 mice[3109]	IF	F	10 mg. pellet with 0.2 mg. MCA (left "in situ" for 8 wks.).	S.C., r. groin (4th breast).	4 (3 sarc., 1 adenoma, at implant site).	6 alive at 56 wks	More than 72 wks.
	12 mice[3105]	IF	F	2 paraffin pellets (10 mg.), 1 with 0.2 mg. MCA & 1 with 0.1 mg. MCA.	S.C., r. & l. groin (4th breast)[3111].	Tumors[3113]	4 alive at 40 wks	More than 72 wks.
	12 mice[3114]	IF	F	2 paraffin pellets (10 mg.), 1 with 0.2 mg. MCA & 1 with 0.1 mg. MCA.	S.C., r. & l. groin 4th breast)[3111].	Tumors[3115]	6 alive at 40 wks	Approx. 64 wks.
	4 mice[3105]	IF	F	10 mg. paraffin pellet with 0.2 mg. MCA (left "in situ" for 8 wks.).[3116]	S.C., r. groin (4th breast).	0	2 alive at 56 wks	Approx. 72 wks.

[3104] 78 also received salivary gland virus.
[3105] Spayed at 4–5 weeks (2 weeks before MCA implantation).
[3106] S.C. interscapular implant of 10 mg. pellet 1% estradiol dipropionate in cholesterol simultaneous with MCA and 28 weeks later.
[3107] S.C. intrascapular implant of 10 mg. pellet 1% estradiol dipropionate in cholesterol simultaneous with MCA and 43 weeks later.
[3108] 1 with pyometra.
[3109] Virgin, age 12–16 weeks.
[3110] 1 femoral muscle carcinoma (distinct from mammary gland).
[3111] 0.2 mg. pellet MCA in right groin; 0.1 mg. in left.
[3112] 12 with 15 right implant site tumors (8 carcinomas, 7 sarcomas); 9 with 10 left implant site tumors (1 adenoma, 6 carcinomas, 1 carcinosarcoma, 2 sarcomas).
[3113] 8 with right implant site tumors (7 sarcomas, 1 squamous carcinoma); 2 with left implant site sarcoma.
[3114] Spayed during lactation at 4–5 months age (2 weeks before MCA implantation).
[3115] 6 with right implant site tumors (4 sarcomas, 2 squamous carcinomas); 1 with left implant site sarcoma.
[3116] S.C. intrascapular implant of 10 mg. pellet 1% estradiol dipropionate in cholesterol simultaneous with MCA and 23 weeks later.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE (Continued)								
	22 mice[3105]	IF	F	10 mg. paraffin pellet with 0.2 mg. MCA (left "in situ" for 12 wks.).[3106]	S.C., r. groin (4th breast).	1 (sarc. at implant site)[3108].	7 alive at 32 wks	More than 72 wks.
	1 dog	Mongrel	F	5 cc. of a 0.5% soln. in sweet almond oil, wkly. for 16 mos.	Intravesically (using catheter).	0[3117]	20 mos	20 mos.
	12 mice[3105]	IF	F	10 mg. paraffin pellet with 0.2 mg. MCA (left "in situ" for 4 wks.).[3118]	S.C., r. groin (4th breast).	1 (carc. at implant site).	All but 1 killed at end of experiment.	More than 72 wks.
	14 mice[3105]	IF	F	10 mg. paraffin pellet with 0.2 mg. MCA (left "in situ" for 16 wks.).[3119]	S.C., r. groin (4th breast).	0[3120]	10 alive at 24 wks	Approx. 40 wks.
	11 mice[3105]	IF	F	10 mg. paraffin pellet with 0.2 mg. MCA (left "in situ" for 4 wks.).[3121]	S.C., r. groin (4th breast).	0	8 alive at 64 wks	More than 71 wks.
	11 mice[3105]	IF	F	10 mg. paraffin pellet with 0.2 mg. MCA (left "in situ" for 8 wks.).[3122]	S.C., r. groin (4th breast).	1 (sarc. at implant site).	8 alive at 64 wks	More than 71 wks.
	6 mice[3105]	IF	F	10 mg. paraffin pellet with 0.2 mg. MCA (left "in situ" for 12 wks.).[3123]	S.C., r. groin (4th breast).	2 (sarc. at implant site).	3 alive at 64 wks	More than 71 wks.
	14 mice[3105]	IF	F	10 mg. paraffin pellet with 0.2 mg. MCA (left "in situ" for 16 wks.).[3124]	S.C., r. groin (4th breast).	2 (1 sarc., 1 carc., at implant site).[3125]	3 alive at 56 wks	More than 71 wks.
Bostrom, H., et al., 1954	Rats	White		0.1 ml. of a 0.5% soln. in olive oil	S.C	Sarc.[3126]		Over 6 mos.
	Mice	White		0.3% in acetone twice wkly. for 12 wks.	Skin	Pap. & epi.[3125]		Over 12 wks.
Brandes, D., and Bourne, G. H., 1954.	Mice[3127]	Strong A	M	Few crystals impregnated in prostatic tissue.	S.C. homograft	Tumors[3128]	Killed at intervals	Up to 60 d.
Fleming, H. S., 1954	20 mice			Tooth germs[3129] treated with unspecified amt. of crystals mixed with sterile agar, at least 90 d. or up to 1 yr.	Axillary transplant.	0		At least 1 yr.
Hoch-Ligeti, C., 1954	60 rats	Wistar	M & F	0.01% in the diet[3130] for at least 22 wks., some up to 83 wks.	P.O	Tumors[3131]	19 died by 4 mos	83 wks.

[3105] Sprayed at 4–5 weeks (2 weeks before MCA implantation).
[3106] S.C. interscapular implant of 10 mg. pellet 1% estradiol dipropionate in cholesterol simultaneous with MCA and 28 weeks later.
[3108] 1 with pyometra.
[3117] Survival time insufficient for tumor development.
[3118] At the time of implantation of MCA a S.C. intrascapular implant of 10 mg. pellet 1% estradiol dipropionate in cholesterol simultaneous with MCA and 40 weeks later.
[3119] Weekly injection 50 γ estradiol dipropionate in arachis oil begun 1 week later.
[3120] 7 with pyometra; 2 with uterine adenocarcinomas. No injection site tumors.
[3121] S.C. intrascapular implant of 10 mg. pellet cholesterol; 8 weeks after removal of MCA and 20 weeks later.
[3122] S.C. intrascapular implant of 10 mg. pellet cholesterol placed 4 weeks after removal of MCA and 24 weeks later.
[3123] S.C. intrascapular implant of 10 mg. pellet cholesterol simultaneous with MCA and 27 weeks later.
[3124] Weekly injection estradiol begun 3 months after treatment.
[3125] Uterine adenocarcinoma in mouse with carcinoma.
[3126] Autoradiographic tumor study.
[3127] Anterior and ventral prostatic lobectomy.
[3128] Transplants developed metaplasia and squamous cell carcinomas.
[3129] From 12–14 day embryos.
[3130] Low protein.
[3131] 5 cholangiomas (1 in control group), gastric papillomas, 2 malignant gastric leiomyosarcomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE (Continued)								
Jull, J. W., 1954	9 mice	IF	M	1 cc. of a 0.5% soln. in almond oil (5 mg. MCA) 3 times at 2 wk. intervals.[3132]	Skin, ventrally & dorsally.	0[3133]	5 alive at 40 wks	More than 42 wks.
	8 mice	IF	M	1 cc. of a 0.5% soln. in almond oil (5 mg. MCA) 3 times at 2 wk. intervals.[3134]	Skin, ventrally & dorsally.	1 (12%) (carc. of breast).[3133]	6 alive at 25 wks	More than 42 wks.
	16 mice[3135]	IF	F	1 cc. of a 0.5% soln. in sweet almond oil (5 mg. MCA) 3 times at 2 wk. intervals.	Skin, ventrally & dorsally.	6 (38%) (total of 11 carc. of breast).[3133]	8 alive at 25 wks	More than 42 wks.
	20 mice[3137]	IF	F	1 cc. of a 0.5% soln. in almond oil (5 mg. MCA) 3 times at 2 wk. intervals.[3138]	Skin, ventrally & dorsally.	2 (10%) (carc. of breast).[3133]	13 alive at 25 wks	More than 42 wks.
Jull. J. W., 1954	11 mice[3137]	IF	F	1 cc. of a 0.5% soln. in almond oil (5 mg. MCA) 3 times at 2 wk. intervals.[3139]	Skin, ventrally & dorsally.	9 (82%) (total of 18 carc. of the breast)[3133,3140]	5 alive at 22 wks	Approx. 31 wks.
	16 mice	IF	M	1 cc. of a 0.5% soln. in almond oil (5 mg. MCA) 3 times at 2 wk. intervals.[3141]	Skin, ventrally & dorsally.	1 (6%) (carc. of breast)[3133]	11 alive at 34 wks	More than 42 wks.
	11 mice	IF	M	1 cc. of a 0.5% soln. in almond oil (5 mg. MCA) 3 times at 2 wk. intervals.[3142]	Skin, ventrally & dorsally.	0[3133]	8 alive at 37 wks	More than 42 wks.
	11 mice	IF	M	1 cc. of a 0.5% soln. in almond oil (5 mg. MCA) 3 times at 2 wk. intervals.[3143]	Skin, ventrally & dorsally.	0[3133]	6 alive at 34 wks	Approx. 42 wks.
	10 mice	IF	M	1 cc. of a 0.5% soln. in almond oil (5 mg. MCA) 3 times at 2 wk. intervals.[3144]	Skin, ventrally & dorsally.	0[3133]	7 alive at 40 wks	More than 42 wks.
	14 mice	IF	M	1 cc. of a 0.5 soln. in almond oil (5 mg. MCA) 3 times at 2 wk. intervals.[3145]	Skin, ventrally & dorsally	4 (29%) (carc. of breast)[3133]	7 alive at 22 wks	Approx. 34 wks.

[3132] Bi-weekly S.C. injection 50 μg. estradiol dipropionate in oil begun 4 weeks before MCA, continued 34 weeks after first MCA.

[3133] Non-mammary tumor incidence in 138 experimental animals: 25% dermal, 6% lymphatic, 1.5% connective tissue.

[3134] Bi-weekly S.C. injection 50 μg. estradiol dipropionate in oil begun 4 weeks before first MCA, continued 18 weeks after first MCA.

[3135] Age: 10–12 weeks.

[3136] At 18–41 weeks.

[3137] Ovariectomized at 4–6 weeks (4 weeks before MCA).

[3138] Bi-weekly S.C. injection 50 μg. estradiol dipropionate in oil begun at 4–6 weeks.

[3139] Bi-weekly S.C. injection 50 μg. of estradiol dipropionate begun at 4–6 weeks; 0.5 mg. progesterone in arachis oil begun at 7–9 weeks; both continued until death.

[3140] At 13–26 weeks.

[3141] Bi-weekly S.C. injection 50 μg. of estradiol dipropionate in oil begun 4 weeks before MCA, continued until death.

[3142] Bi-weekly S.C. injection 3 mg. of triphenylethylene in arachis oil begun 4 weeks before MCA, continued until death.

[3143] Bi-weekly S.C. injection 5 μg. of estradiol dipropionate in oil begun 12 weeks before MCA, continued until death.

[3144] Bi-weekly S.C. injection 3 mg. of triphenylethylene in arachis oil begun 12 weeks before MCA, continued until death.

[3145] Bi-weekly S.C. injection 50 μg. estradiol dipropionate begun 4 weeks before MCA; 0.5 mg. progesterone in arachis oil begun 1 week before MCA; both continued until end.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE (Continued)								
	12 mice	IF	M	1 cc. of a 0.5% soln. in almond oil (5 mg. MCA) 3 times at 2 wk. interval.[3145]	Skin, ventrally & dorsally.	0[3133]	9 alive at 34 wks	More than 42 wks.
Kandutsch and Baumann, 1954.	Mice			0.3% in acetone 3 times wkly. for 10 wks.	Skin	Tumors[3147]		At least 10 wks.
	Rats			5 mg. in 0.25 ml. of hydrogenated vegetable oil, 2 injs., 1 mo. interval.	S.C	Tumors[3148]		At least 2 mos.
	Mice			5 mg. in 0.25 ml. of hydrogenated vegetable oil, 2 injs., 1 mo. interval	S.C	Tumors[3148]		At least 2 mos.
Kirschbaum, A., and Glockler, A., 1954.	62 mice[3149]	DBA/2	M & F	0.25% in benzene 36 times	Skin	Tumors[3150]		
	131 mice	DBA/2	M & F	0.25% in benzene thrice wkly. for 6 or 12 wks.	Skin	Tumors[3151]		12 wks.
Klein, M., 1954	34 mice	C3H/JAX	M	Crystals & fetal stomach	Liver & spleen implants.	Tumors[3152]		300 d. avg.
	40 mice	C3H/JAX	M	Crystals & fetal muscle, cartilage or bone.	Liver & spleen implants.	Tumors[3153]		Avg. 237 d.
	39 mice	C3H/JAX	M	Crystals & fetal skin	Liver & spleen implants.	Tumors[3154]		Avg. 199 d.
Knight, J. S., and Taber, E., 1954.	34 fowls	Light brown Leghorn.	F	0.5% in benzene 4 times wkly. for 42 or 164 d., some given comb-mucoid extract.	Skin	Tumors[3155]		164 d.
	18 capons	Light brown Leghorn.	M	0.5% soln. in benzene 6 times wkly. for 164 or 239 d.	Skin	Tumors[3155]		239 d.
Loeper, J., and Loeper, J., 1954.	34 rats	Albino		1 mg. 5 in oil	S.C	22		4 mos.
	9 rats	Albino		2 mg. in oil	S.C	7		4 mos.
	12 rats	Albino		2.5 mg. in oil	S.C	10		4 mos.
Miller, E. W., and Pybus, F. C., 1954a.	100 mice	CBA	M & F	1.0 mg. in 0.1 cc. sesame oil once	S.C. r. flank	Tumors[3157, 3158].	Avg. 8.6 mos. F & 8.3 mos. M—tumor bearing.	27 mos.

[3133] Non-mammary tumor incidence in 138 experimental animals: 25% dermal, 6% lymphatic, 1.5% connective tissue.
[3145] Bi-weekly S.C. injection 50 μg. of estradiol dipropionate in oil begun 4 weeks before first MCA; continued for 8 weeks after first MCA.
[3147] Skin carcinomas.
[3148] Sarcomas.
[3149] Gonadectomized 2 months or immediately before treatment.
[3150] 28 (45%) with leukemia.
[3151] 76 (57%) with leukemia.
[3152] 6 squamous cell carcinoma (15% in splenic grafts, 3% in hepatic grafts).
[3153] Hepatic grafts with 1 fibrosarcoma, 1 squamous cell carcinoma. Splenic grafts with 27 fibrosarcomas, 5 squamous cell carcinomas.
[3154] 80% with splenic graft tumors (squamous cell carcinomas and fibrosarcomas). 8% with hepatic graft tumors (squamous cell carcinomas).
[3155] 25% of MC group with carcinoma. 35% of MC and mucoid extract group with carcinoma.
[3155] 33.3% with carcinoma.
[3157] 76 tumors (S.C. fibrosarcomas, fibromas, epitheliomas, mammary carcinomas, carcinosarcomas, lipomas).
[3158] Subsequently developed pulmonary and gastric tumors; reported elsewhere.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE (Continued)								
	1080 mice	(CBA x NBT) F_{1-10}.	M & F	1.0 mg. in 0.1 cc. sesame oil once	S.C. r. flank	Tumors[3169, 3160].	Avg. 8.6 mos. F & 7.6 mos. M—tumor bearing.	28 mos.
	1439 mice	(NBT x CBA) F_{1-10}.	M & F	1.0 mg. in 0.1 cc. sesame oil once	S.C. r. flank	Tumors[3160, 3161].	Avg. 8.4 mos. F & 7.5 mos. M—tumor bearing.	32 mos.
	131 mice	NBT	M & F	1.0 mg. in 0.1 cc. sesame oil once	S.C. r. flank	Tumors[3160, 3162].	Avg. 8.2 mos. F & 7.0 mos. M—tumor bearing.	18 mos.
	66 mice	NBT	M & F	1.0 mg. in 0.1 cc. sesame oil once	S.C. r. flank	Tumors[3163, 3164].	Avg. 14.8 mos. F & 9.5 mos. M—tumor bearing.	18 mos.
	30 mice	CBA	M & F	1.0 mg. in 0.1 cc. sesame oil once	S.C. r. flank	Tumors[3164, 3165].	Avg. 16.7 mos. F & 17.4 mos. M—tumor bearing.	27 mos.
	913 mice	(CBA x NBT) F_{1-10}.	M & F	1.0 mg. in 0.1 cc. sesame oil once	S.C. r. flank	Tumors[3164, 3166].	Avg. 15.6 mos. F & 14.1 mos. M—tumor bearing.	28 mos.
	1387 mice	(NBT x CBA) F_{1-10}.	M & F	1.0 mg. in 0.1 cc. sesame oil once	S.C. r. flank	Tumors[3164, 3167].	Avg. 15.6 mos. F & 13.7 mos. M—tumor bearing.	32 mos.
	59 mice	NBT	F	1.0 mg. in 0.1 cc. sesame oil once	S.C. r. flank	Tumors[3168, 3169].	Avg. 5.5 mos	18 mos.
	51 mice	CBA	F	1.0 mg. in 0.1 cc. sesame oil once	S.C. r. flank	0[3169]		27 mos.
	283 mice	(CBA x NBT) F_{1-10}.	F	1.0 mg. in 0.1 cc. sesame oil once	S.C. r. flank	Tumors[3169, 3170].	Avg. 17.3 mos.—tumor bearing.	28 mos.
Miller, E. W., and Pybus, F. C., 1954c.	570 mice	(NBT x CBA) F_{1-10}.	F	1.0 mg. in 0.1 cc. sesame oil once	S.C. r. flank	Tumors[3169, 3171].	Avg. 17.1 mos.—tumor bearing.	32 mos.
Montagna, W., et al., 1954	24 mice[3172]	HR/CH		0.6% in benzene once painted over entire dorsum except wound area.[3173]	Skin	Tumors[3174]	3 died early	18 mos.
Odashima, S., Nakamura, K., 1954.	13 mice	D-D	F	0.3% soln. in benzene, 2 times a wk. repeatedly. About 25 applications.	Skin	Tumors[3176]	5 survived 125 d	125 d.

[3169] 661 tumors (fibrosarcomas, fibromas, epitheliomas, mammary carcinomas, carcinosarcomas, lipomas).
[3160] Subsequent development of pulmonary, mammary and gastric tumors; reported elsewhere.
[3161] 1002 local tumors (S.C. fibrosarcomas, fibromas, epitheliomas, mammary carcinomas, carcinosarcomas, lipomas).
[3162] 52 local tumors (S.C. fibrosarcomas, fibromas, epitheliomas, mammary carcinomas, carcinosarcomas, lipomas).
[3163] 10 pulmonary adenomas or carcinomas, some with multiple nodules.
[3164] Mammary and gastric tumors reported elsewhere.
[3165] 17 pulmonary adenomas or carcinomas, some with multiple nodules.
[3166] 276 pulmonary adenomas or carcinomas, some with multiple nodules.
[3167] 387 pulmonary adenomas or carcinomas, some with multiple nodules.
[3168] 1 mammary tumor.
[3169] Subsequently developed pulmonary and gastric tumors; reported elsewhere.
[3170] 18 mammary tumors (1 at injection site).
[3171] 42 mammary tumors (11 at injection site).
[3172] Hairless.
[3173] Dorsum sub-total dermal excision.
[3174] 19/24 with 145 dermal growths (clustered sebaceous adenomas, some papillomas, 4 epitheliomas).
[3176] 3 squamous cell carcinomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE (Continued)								
Peacock, P. R., and Peacock, A., 1954.	1 fowl	White Leghorn	M	0.5% soln. in arachis oil repeatedly, total dose 30 mg.	Inj. into crop	Tumors[3176]		3 yrs.
Piccagli, R. W., et al., 1954	37 mice	Swiss	F	0.6% in benzene 3 times daily for 14 wks.	Skin, back	Tumors[3177]		52 wks.
	47 mice	Swiss, albino		0.3% in carbowax[3178] 3 times/wk. for 3 wks., twice during 4th, thrice during 5th & twice during 6th.[3179]	Skin	Tumors[3180]	28 died	26 wks.
	47 mice	Swiss, albino		0.6% soln. in benzene 3 times/wk. for 3 wks., twice during 4th, thrice during 5th & twice during 6th.[3179]	Skin	Tumors[3181]	21 died	26 wks.
	37 mice[3182]	Swiss	F	0.6% in benzene daily for 14 wks	Skin, back	Tumors[3183]		52 wks.
	20 mice[3182]	Swiss	F	0.6% in benzene 3 times wkly. for 14 wks.	Skin, back	Tumors[3184]		52 wks.
Pollard and Bussell, 1954	28 to 30 mice.	C3H		0.5 mg. in cooking oil	S.C	Sarc		Over 5 wks.
	28–30 mice[47]	C3H		0.5 mg. susp. in cooking oil once	S.C	Tumors[3185]		5 wks.
Rigdon and Brashear, 1954	18 chickens[3186]	Rhode Island Red.		0.25% in acetone daily for 1 mo	Skin (under r. wing).	3 pap., 5 epi.[3187]	6 sacrificed at 86 d.	Over 5 mos.
Salley, J. J., 1954	6 hamsters	Syrian	3 āā	0.5% soln. in acetone 3 times a wk. for 16 wks.	Cheek pouch	Tumors[3188]	5 at 25 wks	25 wks.
	6 hamsters	Syrian	3 āā	0.5% soln. in benzene 3 times a wk. for 16 wks.	Cheek pouch	Tumors[3189]	3 at 25 wks	25 wks.
Strong, L. C., 1954	532 mice	2-Prunt inbred.[3190]	398 F, 134 M.	1 mg. in 0.1 cc. of sesame oil	Inj	Tumors[3191]		At least 164 d.
Sulzberger, M. B., et al., 1954.	114 mice[3182]	Swiss	F	0.3% in anhydrous lanolin 3 times wkly. for 14 wks.	Interscapular skin.	Tumors[3192]	110 at 27th wk	27 wks.
Teir, H., et al., 1954	20 rats	Wistar	M & F	0.3% in benzene soln., twice a wk. for 1 yr.[3193]	Skin	Tumors[3194]	8 at 1 yr	1 yr.
	20 rats	Wistar	M & F	0.3% in benzene soln. twice per wk. for 1 yr.[3195]	Skin	Tumors[3196]	2 at 1 yr	1 yr.

[47] Young.
[3176] 1 anaplastic carcinoma; 1 spindle cell sarcoma.
[3177] 33 epitheliomas.
[3178] Dissolved in wax at 41° C.
[3179] Daily S.C. injections (6 days/week for 5 weeks) of 0.25 ml. physiological saline; 4 injections in 6th week, 1 in 7th week.
[3180] 5 epitheliomas (1 in biopsied animal).
[3181] 22 epitheliomas, 5 papillomas (3 arose in biopsied animals).
[3182] Age: 2 months.
[3183] 26 epitheliomas.
[3184] 19 epitheliomas.
[3185] Injection site fibrosarcomas.
[3186] Age: 44 days at beginning.
[3187] 5 with epitheliomas (regressed); 3 with papillary lesions (regressed).
[3188] 2 benign papillomas, 2 preinvasive carcinomas.
[3189] 1 benign tumor.
[3190] Early: 1–2 litter descents. advanced: 7–8–9 litter descents.
[3191] Injection site fibrosarcomas. Females: advanced litter descent (avg. latent period 126.0 days). Males: advanced litter descent (avg. latent period 164.0 days). Females: early litter descent (avg. latent period 98.0 days).
[3192] 44 epitheliomas.
[3193] Simultaneous I.P. saline.
[3194] 7 papillomas, 1 carcinoma.
[3195] Simultaneous I.P. injection of 0.5 mg. heated newborn dermal suspension.
[3196] 2 carcinomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE (Continued)								
	20 rats	Wistar	M & F	0.3% in benzene soln. twice per wk. for 1 yr.[3197]	Skin	Tumors[3198]	9 at 1 yr	1 yr.
	20 rats	Wistar	M & F	0.3% in benzene soln. twice per wk. for 1 yr.[3199]	Skin	Tumors[3200]	9 at 12 mos	1 yr.
	17 rats	Wistar	M & F	0.3% in benzene soln., twice per wk. for 1 yr.[3201]	Skin	Tumors[3202]	5 at 1 yr	1 yr.
	23 rats	Wistar	M & F	0.3% in benzene soln. twice per wk. for 1 yr.[3203]	Skin	Tumors[3204]		1 yr.
	10 rats	Wistar	M & F	0.3% in benzene soln. twice a wk. for 3 mos.[3205]	Skin	0	7 at 1 yr	16 mos.
	20 rats	Wistar	M & F	0.3% in benzene soln. twice per wk. for a yr.[3206]	Skin	Tumors[2107]	11 at 11 mos	1 yr.
Batra, B. K., 1955	3 mice, 2 mos. old.	C3H	F	0.25% benzene soln	Each ovary painted with a single brush stroke of soln.	([3208])		At least 9 wks.
	4 mice, 2 mos. old.	A (strong)	F	0.25% benzene soln	Each ovary was painted with a single stroke of soln.	([3209])		At least 30 wks.
	4 mice, 2 mos. old.	C57BL	F	0.25% benzene soln	Each ovary painted with a single brush stroke of soln.	([3210])		At least 24 wks.
Berenblum and Haran, 1955	20 mice	C3H	M	20 wkly. administrations of 0.3 ml. of 0.5% carcinogen in polyethylene[3211] glycol-400.	P.O., stomach tube.	Tumors[3212]	26 at 10 wks	30 wks.
	25 mice	Swiss	M	1 dose of 0.3 ml. of 0.5% carcinogen in polyethylene glycol-400.[3213]	P.O., stomach tube.	Tumors[3214]	21 at 10 wks	30 wks.
	55 mice	Swiss	M	0.3 ml. of 0.5% MCA in PEG solvent, once.[2827,2826]	P.O., stomach tube.	30 paps. of forestomach.	43 at 10 wks	30 wks.
	25 mice	Swiss	M	0.3 ml. of 0.5% MCA in PEG solvent, once.[2835]	P.O., stomach tube.	Tumors[3215]	21 at 10 wks	30 wks.

[2826] 30 weekly doses .3 ml. of 3% croton oil in PEG after treatment.
[2827] Milk only for 3 days, water only for 18 hrs. before treatment. Water only for 18 hrs. before secondary treatment.
[2835] Milk only for 3 days, water only for 18 hrs. before treatment.
[3197] Simultaneous I.P. injection of 0.01 mg. newborn dermal suspension.
[3198] 8 tumors (papillomas and carcinomas).
[3199] Simultaneous I.P. injection of 0.1 mg. newborn dermal suspension.
[3200] Papillomas and carcinomas; 1 fibrosarcoma.
[3201] Simultaneous I.P. injection of 0.5 mg. newborn dermal suspension.
[3202] 3 papillomas.
[3203] Simultaneous I.P. injection of 1 mg. newborn dermal suspension.
[3204] 20 papillomas and carcinomas; 1 sarcoma.
[3205] Received I.P. injections of newborn dermal suspension for 12½ months.
[3206] Simultaneous I.P. injection of 10 mg. newborn dermal suspension.
[3207] 11 papillomas and carcinomas; 1 fibrosarcoma, 1 hemangioma.
[3208] Hemorrhagic effect in litter. 19 young animals with local hemorrhagic areas. Intermediate reaction.
[3209] 62 young with hemorrhagic effect. 1 club foot. Reaction least lethal.
[3210] 40 offspring with hemorrhagic areas.
[3211] Starved 18 hours before treatment.
[3212] 4 forestomach papillomas, 6 forestomach squamous carcinomas at 21–30 weeks.
[3213] Milk only for 3 days before treatment.
[3214] Forestomach tumors: 1 carcinoma at 11–20 weeks; 18 papillomas, 1 carcinoma at 21–30 weeks.
[3215] 18 forestomach papillomas, 2 forestomach carcinomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE (Continued)								
	13 mice	Swiss	M	0.3 ml. of 0.5% MCA in PEG solvent, once.[2827,2833]	P.O., stomach tube.	2 paps. of forestomach.	9 at 10 wks	30 wks.
Burdette, W. J., 1955	51 mice[3216]	A		Crystals implanted with each graft of both types.[3216]	Implanted in grafts in both ears.	Tumors[3217]	Few killed at mthly. intervals.	1½ yrs.
Caputo, A., and Giovanella, B., 1955.	92 rats	Wistar	M & F	Fibrin sponge impregnated with a 10% soln.	Intra-cerebrum	45[3218]		At least 120 d.
Chahovitch, X., 1955	10 spermophiles (Manchurian marmots).			1 ml. of 1% in oil 2 times at 7 mos. interval.	S.C	0	2 at 8 mos	8 mos.
Cloudman, A. M., et al., 1955	30 mice[3219]	CF-1	F	3 mg. pellet of 1% MCA in cholesterol.	Implantation near base of tail.	12 (40.0%) (malignant tumors in treatment area).	15 alive at 397 d	More than 607 d.
	30 mice[3219]	CF–1	F	0.29 ml. of a 0.6% soln. in benzene once (1.74 mg. carcinogen).	Skin	Skin tumors[3220].	15 alive at 318 d	More than 403 d.
Fortner, J. G., 1955	14 cats			1 pellet of pure compound weighing 50, 100 or 250 mg.	Implant into lumen of the gallbladder.	5 (gallbladder carc.)[3221].	6 alive at 23 mos	32 mos.
Gillman, T., et al., 1955	18 mice				Skin	Tumors[3222]		
	10 mice				Skin	Tumors[3223]		
Grant, R., and Ivy, A. C., 1955.	8 rats	Sprague-Dawley.	F	2–3 mg. for 200 d.[3224]	Embedded in gastric submucosa.	Tumors[3225]		Over 200 d.
	2 rats	Sprague-Dawley.	F	2–3 mg. for over 200 d.[3224]	Embedded in gastric submucosa.	Tumors[3226]		Over 200 d.
	7 rats	Sprague-Dawley.	F	2–3 mg. thread for 200 d.[3227]	Embedded in gastric submucosa.	Tumors[3228]		200 d.
	2 rats	Sprague-Dawley.	F	2–3 mg. thread for over 200 d.[3227]	Embedded in gastric submucosa.	Tumors[3229]		At least 312 d.

[2827] Milk only for 3 days, water only for 18 hrs. before treatment. Water only for 18 hrs. before secondary treatment.
[2833] 30 weekly doses .3 ml. of PEG after treatment.
[3216] Right pinna S.C. bronchial transplants; left pinna S.C. pulmonary parenchyma transplants.
[3217] Numerous malignant fibrosarcomas. Impossible to determine tissue of origin.
[3218] Histological study of induced cerebral tumors.
[3219] Age: 42–55 days.
[3220] 17% with treatment site papillomas; avg. 1.6/tumor-bearer; 16.7% with treatment site carcinoma.
[3221] Invasive, metastatic tumors: 2 adenosquamous carcinoma, 3 adenocarcinomas, 1 squamous carcinoma.
[3222] 17/18 with papillomas; avg. 6.5/mouse.
[3223] 10 with microscopic, 9 with macroscopic malignant tumors.
[3224] Submucosa cauterized.
[3225] 1 adenoacanthoma at 266 days.
[3226] 1 chondromyxoma at 367 days.
[3227] Muscularis propria excised.
[3228] 1 sarcoma at 152 days.
[3229] 1 adenomatous cyst at 312 days.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE (Continued)								
	10 rats	Sprague-Dawley.	F	2–3 mg. for 200 d	Embedded in gastric submucosa.	Tumors[3230]		200 d.
	8 rats	Sprague-Dawley.	F	2–3 mg. thread for over 200 d.[3224, 3227]	Embedded in gastric submucosa.	Tumors[3231]		Over 200 d.
	Rats	Sprague-Dawley.	F	2–3 mg. thread for 50 d	Embedded in gastric submucosa.	Tumors[3232]		132 d. or more.
	Rats	Sprague-Dawley.	F	2–3 mg. thread for over 200 d	Embedded in gastric submucosa.	Tumors[3233]		Over 200 d.
Griffin, A. Clark, et al., 1955	Rats	Sprague-Dawley.	M	5 mg. in olive oil once	I.M	Tumors[3234]	All killed at 20 wks.	20 wks.
	Rats[3235]	Sprague-Dawley.	M	5 mg. in olive oil once	I.M	Tumors[3235]	All killed at 20 wks.	20 wks.
Gruskay, F. L., and Strong, L. C., 1955.	Mice[3237]	pBr & I	M & F	1 mg. dissolved in 0.1 cc. sesame oil once.	S.C. r. scapular region.	Tumors[3238, 3239]	Till death or tumor development.	At least 235 d.
Herrmann, F., et al., 1955	39 mice	Swiss albino	F	0.6% in benzene 3 times/wk. for 3 wks.[3240]	Skin	Tumors[3241]	5 died (without tumors).	36 wks.
	50 mice	Swiss albino	F	0.6% in carbowax 1500 5 times a wk. for 3 wks.[3242]	Skin	Tumors[3243]	13 died (without tumors)	36 wks.
	50 mice	Swiss albino	F	0.6% in carbowax 1500 5 times a wk. for 3 wks.[3242,3244]	Skin	Tumors[3245]	19 died (without tumors).	36 wks.
	37 mice	Swiss albino	F	0.6% in benzene 3 times/wk. for 3 wks.[3245]	Skin	Tumors[3247]	5 died (without tumors).	36 wks.
	50 mice	Swiss albino	F	0.6% in carbowax 1500 5 times/wk. for 3 wks.[3248,3242]	Skin	Tumors[3249]	16 died (without tumors).	36 wks.
	50 mice	Swiss albino	F	0.6% in carbowax 1500 5 times/wk. for 3 wks.[3250]	Skin	Tumors[3251]	19 died (without tumors).	36 wks.

[3224] Submucosa cauterized.
[3227] Muscularis propria excised.
[3230] 1 sarcoma at 126, 1 at 146, days.
[3231] 1 sarcoma at 173 days.
[3232] 1 para-parotid squamous cell carcinoma at 132 days.
[3233] 1 sarcoma at 153 days. 1 adenoacanthoma at 220 days.
[3234] 100% tumors.
[3235] Hypophysectomized.
[3236] 25% tumors.
[3237] As well as hybrids.
[3238] Injection site fibrosarcomas; longest latent period 235 days.
[3239] Genetic study of tumor resistance.
[3240] Alternate inguinal S.C. injections (daily, 5 days/week for 3 weeks) of approximately 20 mg. cortisone acetate begun 2 weeks before treatment.
[3241] 19 with dermal tumors.
[3242] Simultaneous opposite side injection of physiological saline.
[3243] 3 with dermal tumors (squamous cell carcinomas, papillomas, sebaceous adenomas, sarcomas). 17 with leukemia and multiple systemic malignancies.
[3244] Treatment area biopsy during 2nd and 3rd weeks.
[3245] 8 with dermal tumors (squamous cell carcinomas, papillomas, sebaceous adenomas, sarcomas). 6 with leukemia and multiple systemic malignancies.
[3246] Alternate inguinal S.C. injections (daily, 5 days/week for 3 weeks) of physiological saline begun 2 weeks before treatment.
[3247] 3 with dermal tumors.
[3248] Treatment area biopsy during first week.
[3249] 10 with dermal tumors (squamous cell carcinomas, papillomas, sebaceous adenomas, sarcomas). 5 with leukemia and multiple systemic malignancies.
[3250] Simultaneous S.C. inguinal injections (daily, 5 days/week for 3 weeks) of approximately 20 mg. cortisone acetate/kg. body weight.
[3251] 8 with dermal tumors (squamous cell carcinomas, papillomas, sebaceous adenomas, sarcomas) 6 with leukemia and multiple systemic malignancies.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE (Continued)								
	50 mice	Swiss albino	F	0.6% in carbowax 1500 5 times/wk. for 3 wks.[3252,3242]	Skin	Tumors[3253]	15 died (without tumors).	36 wks.
	50 mice	Swiss albino	F	0.6% in carbowax 1500 5 times/wk. for 3 wks.[3252,3250]	Skin	Tumors[3254]	19 died (without tumors).	36 wks.
	50 mice	Swiss albino	F	0.6% in carbowax 1500 5 times/wk. for 3 wks.[3244,3250]	Skin	Tumors[3256]	17 died (without tumors).	36 wks.
	50 mice	Swiss albino	F	0.6% in carbowax 1500 5 times/wk. for 3 wks.[3248,3250]	Skin	Tumors[3256]	11 died (without tumors).	36 wks.
	49 mice	Swiss albino	F	0.6% in benzene 3 times/wk. for 3 wks.[3257]	Skin	Tumors[3268]	14 died (without tumors).	36 wks.
	40 mice	Swiss albino	F	0.6% in benzene 3 times/wk. for 3 wks.[3269]	Skin	Tumors[3260]	7 died (without tumors).	36 wks.
	48 mice	Swiss albino	F	0.6% in benzene 3 times/wk. for 3 wks.[3261]	Skin	Tumors[3262]	5 died (without tumors).	36 wks.
	37 mice	Swiss albino	F	0.6% in benzene 3 times/wk. for 3 wks.[3263]	Skin	Tumors[3264]	6 died (without tumors).	36 wks.
Herrmann, F., et al., 1955	39 mice	Swiss albino	F	0.6% benzene 3 times/wk. for 3 wks.[3265]	Skin	Tumors[3266]	4 died (without tumors).	36 wks.
	46 mice	Swiss albino	F	0.6% in benzene 3 times/wk. for 3 wks.	Skin	Tumors[3267]	5 died without tumors).	36 wks.
	37 mice	Swiss albino	F	0.6% in benzene 3 times/wk. for 3 wks.[3268]	Skin	Tumors[3269]	2 died (without tumors).	36 wks.
Holtkamp et al., 1955	Rats		F	3 mg. in 0.25 ml. of corn oil	S.C. l. midthigh	[3270]		
Ivy, A. C., 1955	31 rabbits[3271]			15 mg. daily, 6 d./wk	P.O	Tumors[3272]	5 at 1.5 yrs	3.3 yrs.
	117 rats			2–3 mg. implanted sub-mucosa of stomach with or without thread.[3273]	Implanted	Tumors[3274]		

[3242] Simultaneous opposite side injection of physiological saline.
[3244] Treatment area biopsy during 2nd and 3rd weeks.
[3248] Treatment area biopsy during first week.
[3250] Simultaneous S.C. inguinal injections (daily, 5 days/week for 3 weeks) of approximately 20 mg. cortisone acetate/kg. body weight.
[3252] Treatment area biopsy during 3rd week.
[3253] 7 with dermal tumors (squamous cell carcinomas, papillomas, sebaceous adenomas, sarcomas). 11 with leukemia and multiple systemic malignancies.
[3254] 10 with dermal tumors (squamous cell carcinomas, papillomas, sebaceous adenomas, sarcomas). 8 with leukemia and multiple systemic malignancies.
[3255] 15 with dermal tumors (squamous cell carcinomas, papillomas, sebaceous adenomas, sarcomas). 7 with leukemia and other multiple systemic malignancies.
[3256] 16 with dermal tumors (squamous cell carcinomas, papillomas, sebaceous adenomas, sarcomas). 7 with leukemia and multiple systemic malignancies.
[3257] Simultaneous S.C. inguinal injections (daily, 5 days/week for 3 weeks) of approximately 20 mg. cortisone acetate/kg. body weight.
[3258] 17 with dermal tumors.
[3259] Alternate S.C. inguinal injections (daily, 5 days/week for 3 weeks) of 0.9% benzyl alcohol, Tween 80 and Na-carboxyl-methylcellulose in physiological saline before treatment.
[3260] 4 with dermal tumors.
[3261] Simultaneous S.C. inguinal injections (daily, 5 days/week for 3 weeks) of 0.9% benzyl alcohol, Tween 80 and Na-carboxy-methylcellulose in physiological saline.
[3262] 13 with dermal tumors.
[3263] Alternate S.C. inguinal injections (daily 5 days/week for 3 weeks) of physiological saline before treatment.
[3264] 5 with dermal tumors.
[3265] Alternate S.C. inguinal injections (daily, 5 days/week for 3 weeks) of approximately 20 mg. cortisone acetate/kg. body weight before treatment.
[3266] 8 with dermal tumors.
[3267] 11 with dermal tumors.
[3268] Alternate S.C. inguinal injections (daily, 5 days/week for 3 weeks) of 0.9% benzyl alcohol, Tween 80 and Na-carboxyl-methylcellulose in physiological saline 2 weeks before treatment.
[3269] 10 with dermal tumors.
[3270] Injection site fibrosarcomas.
[3271] With methylcholanthrene induced chronic ulcer.
[3272] 20% cystic gastritis, 10% atrophic gastritis; ulcer scar papillomata (80% with epithelioma inclusion).
[3273] 41 received submucosal cauterization.
[3274] 12 invasive tumors, details to be published later.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE (Continued)								
Kirschbaum and Liebelt, 1955 (B).	31 mice[3275]	DBA/2	M	0.25% soln. of methylcholanthrene in thiophene-free benzene.[3276]	Skin[3277]	30 (97%) developed lymphatic leukemia.		250 d.
	28 mice[3278]	DBA/2	F	0.25% soln. of methylcholanthrene in thiophene-free benzene.[3276]	Skin[3277]	22 (79%) developed lymphatic leukemia.		250 d.
	57 mice[3278]	DBA/2	M	0.25% soln. of methylcholanthrene in thiophene-free benzene.[3276]	Skin[3277]	33 (67%) developed lymphatic leukemia.		250 d.
	22 mice[3279]	DBA/2	11 M, 11F	0.25% soln. of methylcholanthrene in thiophene-free benzene.[3276]	Skin[3277]	15 (68%) developed lymphatic leukemia.		200 d.
	27 mice[198]	DBA/2	M	0.25% soln. of methylcholanthrene in thiophene-free benzene.[3280]	Skin[3277]	26 (96%) developed lymphatic leukemia.		375 d.
	35 mice	DBA/2	M	18 paintings of 0.25% methylcholanthrene in thiophene-free benzene.	Skin[3277]	21 (60%) developed lymphatic leukemia.		375 d.
	17 mice[3281]	DBA/2	M	18 paintings of 0.25% soln. of methylcholanthrene in thiophene-free benzene.	Skin[3277]	6 (35%) developed lymphatic leukemia.		250 d.
	17 mice[3278]	DBA/2	M	18 paintings of 0.25% soln. of methylcholanthrene in thiophene-free benzene.	Skin[3277]	4 (24%) developed lymphatic leukemia.		450 d.
	36 mice	DBA/2	M	18 paintings of 0.25% soln. of methylcholanthrene in thiophene-free benzene.	Skin[3277]	22 (61%) developed lymphatic leukemia[3282].		300 d.
	15 mice[3275]	DBA/2	F	0.25% soln. of methylcholanthrene in thiophene-free benzene.[3276]	Skin[3277]	15 (100%) developed lymphatic leukemia.		250 d.

[198] Castrated.
[3275] Thymectomized at 35–50 days; gonadectomized.
[3276] 36 applications begun after thymectomy.
[3277] Different application site each treatment.
[3278] Thymectomized at 35–50 days.
[3279] Thymectomized at 4 weeks.
[3280] 18 applications.
[3281] Thymectomized at 35–50 days; castrated.
[3282] 9 (25%) with thymomas; 13 (36%) with leukemia.
[3287] Castrated at 42 days of age.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE (Continued)								
Kirschbaum, et al., 1955 (A)	45 mice[3283]	DBA/2	M	36 paintings of 0.25% soln. of MCA in benzene.[3284]	Skin	18 (40%) developed leukemia.		Approx. 125 d.
	27 mice	DBA/2	F	36 paintings of 0.25% soln. of methylcholanthrene in benzene.	Skin	19 (67%) developed lymphatic leukemia.		Approx. 150 d.
	19 mice[198]	DBA/2	F	36 paintings of 0.25% soln. of methylcholanthrene in benzene.	Skin	16 (84%) developed lymphatic leukemia.		Approx. 100 d.
	33 mice[198]	DBA/2	M	36 paintings of 0.25% soln. of methylcholanthrene in benzene.	Skin	27 (82%) developed lymphatic leukemia.		100 d. (Approx.)
	33 mice	DBA/2	M	36 paintings of 0.25% soln. of MCA in benzene.[3285]	Skin	16 (48%) developed leukemia.		Approx. 150 d.
	45 mice	DBA/2	M	36 paintings at 0.25% soln. of MCA in benzene [3284]	Skin	6 (13%) developed leukemia.		Approx. 200 d.
	17 mice[198]	DBA/2	F	18 paintings of 0.25% soln. of MCA in benzene.[3284]	Skin	3 (18%) developed leukemia.		Approx. 275 d.
	35 mice[198]	DBA/2	M	18 paintings of 0.25% soln. of methylcholanthrene in benzene.[3284]	Skin	18 (51%) developed leukemia.		450 d.
	36 mice	DBA/2	F	18 paintings of 0.25% soln. of methylcholanthrene in benzene.[3284]	Skin	4 (11%) developed leukemia.		Approx. 125 d.
Kirschbaum et al., 1955 (A)	38 mice	DBA/2	M	36 paintings of 0.25% soln. of methylcholanthrene in benzene.	Skin	20 (54%) developed leukemia.		Approx. 300 d.
	27 mice[198]	DBA/2	M	36 paintings of 0.25% soln. of methylcholanthrene in benzene.[3286]	Skin	8 (30%) developed luekemia.		Approx. 200 d.
	34 mice[3287]	DBA/2	M	36 paintings of 0.25% soln. methylcholanthrene in benzene.[3285]	Skin	28 (82%) developed leukemia.		Approx. 100 d.

[198] Castrated.
[3283] Castrated at 6 months.
[3284] Treatment begun at 6 months.
[3285] Treatment begun at 42 days.
[3286] Testosterone phenylacetate—7.5 mg. once every 3 weeks for 15 weeks.
[3287] Castrated at 42 days of age.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE (Continued)								
Klein, M., 1955 (A)	26 mice[3288]	BALB/c	F	Thrice wkly. applications of 0.1% MCA in olive oil for first 30 wks. & twice wkly. doses thereafter for duration of experiment.	Vagina[3289]	2 (squamous-cell carc. of the vagina[3290].		Avg. of 373 d.
	25 mice[3288]	BALB/c	F	1 application of 0.1% MCA in olive oil.[3291]	Vagina[3289]	0		Avg. of 401 d.
Knight and Taber, 1955	9 capons[3292]	Lt. brown Leghorn.		0.5% soln. of methylcholanthrene in benzene 6 times/wk. for 34 wks.[3293]	L. side of comb	3 carc.[3294]		At least 34 wks.
	12 chickens[3295]	Lt. brown Leghorn.	F	0.5% soln. of methylcholanthrene in benzene 4 times/wk. for 6 wks.[3296]	Skin, ventral surface of l. wing.	3 carc.[3297]		At least 6 wks.
	8 chickens[3295]	Lt. brown Leghorn.	F	0.5% soln. of methylcholanthrene in benzene 4 times/wk. for 24 wks.[3296]	Skin, ventral surface of l. wing.	2 carc.[3298]		At least 24 wks.
	9 chickens[3295]	Lt. brown Leghorn.	F	0.5% soln. of methylcholanthrene in benzene 4 times/wk. for 24 wks.	Skin, ventral surface of l. wing.	3 carc.[3299]		At least 24 wks.
	9 capons[3292]	Lt. brown Leghorn.		0.5% soln. of methylcholanthrene in benzene 6 times/wk. for 34 wks.	Skin, l. side of the comb.	2 carc.[3299]		At least 34 wks.
	5 chickens[3295]	Lt. brown Leghorn.	F	0.5% soln. of methylcholanthrene in benzene 4 times/wk. for 6 wks.	Skin, ventral surface of l. wing.	2 carc.[3300]		6 wks.
Liang & Cowdry, 1955	50 mice[3301]	Swiss	F	0.6% MCA in pure benzene thrice wkly. for 4 wks.	Skin, interscapular reg.	Skin Pap. & carc.	Killed at intervals	100 d.
Loeper, J., 1955	12 rats	White		2.5 mg	S.C	([3303])		4 mos.
	9 rats	White		2 mg	S.C	([3304])		4 mos.
	34 rats (120 g.)	White		1 mg	S.C	22[3305]		4 mos.
Marchant, J., 1955	10 mice	IF x C57	F	0.5% soln. in olive oil at fortnightly intervals 8 times, 4 spots on each side of dorsal & ventral surfaces.	Skin	Tumors[3306]	16.1 mos. mean survival.	At least 16 mos.

[3288] 60 to 77 days old at initial treatment.
[3289] Cotton plug immersed in test substance inserted into vagina and allowed to remain until following day.
[3290] First appeared 227 days after initial treatment.
[3291] Followed in 3 days by thrice-weekly vaginal applications of 1% croton oil in olive oil for 30 weeks and twice-weekly applications for duration of experiment.
[3292] Castrated at 22 days of age; 35 days of age at first treatment.
[3293] Also received 3 subcutaneous implantations (first at 22 days) of testosterone propionate pellets weighing approximately 38 mg.
[3294] 2 birds evinced massive lymphocytic responses.
[3295] 16 days of age at first treatment.
[3296] Received (on same days) 0.1 cc. injection (subcutaneous) of capon comb mucoid extract in 2.5% aqueous solution.
[3297] 12 birds evinced massive lymphocytic responses.
[3298] 8 birds evinced massive lymphocytic responses.
[3299] 9 birds evinced massive lymphocytic responses.
[3300] 5 birds evinced massive lymphocytic responses.
[3301] 5 weeks of age at initial treatment.
[3302] Extensive observations on the role of the hair follicles included.
[3303] 10 tumors of unspecified origin.
[3304] 7 tumors of unspecified origin.
[3305] Tumors of unspecified origin.
[3306] 3 with mammary tumors.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE (Continued)								
	9 mice	IF	F	0.5% soln. in olive oil at fortnightly intervals 8 times, 4 spots on each side of dorsal & ventral surfaces.	Skin	Tumors[3307]	5.75 mos. mean survival.	At least 5.75 mos.
	11 mice	IF	F	0.5% soln. in olive oil at fortnightly intervals 8 times, 4 spots on each side of dorsal & ventral surfaces.	Skin	0	8 mos. mean survival.	At least 8 mos.
	7 mice	IF	F	0.5% soln. in olive oil at fortnightly intervals 8 times, 4 spots on each side of dorsal & ventral surfaces.	Skin	Tumors[3308]	5.3 mos. mean survival.	At least 5.3 mos.
	16 mice	IF	F	0.5% soln. in olive oil at fortnightly intervals 8 times, 4 spots each side of dorsal & ventral surfaces.	Skin	Tumors[3309]	9 mos. mean survival.	At least 9 mos.
	8 mice	IF x C57	F	0.5% soln. in olive oil at fortnightly intervals 8 times, 4 spots on each side of dorsal & ventral surfaces.	Skin	0	12 mos. mean survival.	At least 12 mos.
Marchant and Orr, 1955	15 mice	White-mixed stock.	M & F	Drop of 0.3% MCA in acetone, once wkly. for 12 wks.[3310]	Skin, 1 side of the thorax.	14[3311] malignant tumors.	Survived from 167 to 509 d.	509 d.
	18 mice	White-mixed stock.	M & F	Drop of 0.3% MCA in acetone, once wkly. for 12 wks.[3312]	Skin, 1 side of the thorax.	Tumors[3313]	Survived from 141 to 638 d.	638 d.
	15 mice	White-mixed stock.	M & F	Drop of 0.3% soln. of MCA in acetone.[3314,3315]	Skin, side of the thorax.	10[3316,3317]	Survived from 130–518 d.	518 d.
	9 mice	White-mixed stock.	M & F	Drop of 0.3% soln. of 20-MCA in acetone.[3318,3315]	Skin, side of the thorax.	Tumors[3319]	Survived from 193–568 d.	568 d.
	7 mice	White-mixed stock.	M & F	Drop of 0.3% MCA in acetone once wkly. for 12 wks.[3320]	Skin, r. side of the thorax.	Tumors[3321]	Survived from 262–328 d.	328 d.
	12 mice	White-mixed stock.	M & F	Drop of 0.3% MCA in acetone, once wkly. for 12 wks.	Skin, one side of the thorax.	Tumors[3322]	Survived from 157–522 d.	522 d.
	15 mice	White-mixed stock.	M & F	Drop of 0.3% MCA in acetone, once wkly. for 12 wks.	Skin, one side of the thorax.	13[3323,3324]	Survived from 196–438 d.	438 d.

[3307] 3 with mammary tumors (2 multiple).
[3308] 2 with mammary tumors.
[3309] 12 with mammary tumors (3 multiple).
[3310] Multiple full thickness ear skin segments transplanted to treatment application site 6–7 wks. before treatment.
[3311] With 1 exception the malignant tumors developed on suture line cicatricial tissue.
[3312] Dermal pinch graft trimmed and replaced 4 wks. before treatment.
[3313] 8 malignant graft tumors. 4 malignant suture line cicatricial tumors.
[3314] Treated at 7 days.
[3315] Weekly application of 0.5% croton oil in acetone begun after treatment (age 4 wks.).
[3316] At 89–460 days.
[3317] 6/10 tumors progressed to malignancy after 280–490 days.
[3318] Treated on day of birth.
[3319] 1 mammary tumor (520 days). 3 papillomas (avg. 369 days).
[3320] 24 weekly applications (left thorax) of 0.5% croton oil in acetone.
[3321] 1 squamous carcinoma developed on croton oil treated graft. 6 tumors (5 carcinomas, 1 papilloma) developed on graft bearing treated site.
[3322] 2 benign tumors developed on treated grafts implanted on untreated site. Treated site healed. 5 tumors (3 malignant) developed on cicatricial tissue; 4 tumors (3 malignant) developed peripheral to cicatricial tissue.
[3323] First tumor at 107 days.
[3324] 12/13 malignant after 142–380 days.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE (Continued)								
	11 mice	White-mixed stock.	M & F	Drop of 0.3% MCA in acetone, once wkly. for 12 wks.	Skin, one side of the thorax.	9[3325]	Survived from 153–460 d.	460 d.
Miller, E. W., and Pybus, F. C., 1955.	916 mice	(CBA x NBT) F_{1-10}.	M & F	1.0 mg. in 0.1 cc. sesame oil once	S.C. r. flank	Tumors[3326, 3327].	Avg. 14.4 mos.—tumor bearing.	28 mos.
	28 mice	NBT	22 F, 6 M	1.0 mg. in 0.1 cc. sesame oil once	S.C. r. flank	Tumors[3327, 3328, 3329].	Avg. 14.7 mos.—tumor bearing.	18 mos.
Miller, E. W., and Pybus, F. C., 1955.	11 mice	CBA	4 F, 7 M	1.0 mg. in 0.1 cc. sesame oil once	S.C. r. flank	Tumors[3330, 3331, 3332].	Avg. 22 mos.—tumor bearing.	27 mos.
	1316 mice	(NBT x CBA) F_{1-10}.	M & F	1.0 mg. in 0.1 cc. sesame oil once	S.C r. flank	Tumors[3327, 3333].	Avg. 13.6 mos.—tumor bearing.	32 mos.
Moon and Simpson, 1955	15 rats	Long-Evans	F	1 pellet of 3-methyl-cholanthrene weighing 8–12 mg.	I.M., r. gastrocnemius muscle.	8 sarc.[3334]		316 d.
	15 rats	Long-Evans	F	1 pellet of 3-methylcholanthrene weighing 8–12 mg.	I.M. r. gastrocnemius muscle.	8 sarc.[3335, 3336].		At least 384 d.
	15 rats[3337]	Long-Evans	F	1 pellet of 3-methylcholanthrene weighing 8–12 mg.	I.M. r. gastrocnemius muscle.	1 sarc.[3338]	7 at 300 d	300 d.
	15 rats[3337]	Long-Evans	F	1 pellet of 3-methylcholanthrene weighing 8–12 mg.	I.M., r. gastrocnemius muscle.	1 sarc.[3339]	9 at 350 d	350 d.
Mori, K., et al., 1955	Rats,[3340, 235]	Wistar-Mixed.[3341]	M	0.2–1.0 mg./rat/d. in polyethylene glycol in daily drinking water for 223 d. Maintained on rice diet containing Na_2CO_3, fish powder, and cod liver oil.	P.O	0[3342]	64 survived more than 2 mos.	223 d.
	18 rats[56]	Albino-Wistar	M	1–5 mg./rat/d., stabilized by addition of small amt. of Tween 80, in a rice diet for 266 d.	P.O	Tumors[3343]	12 survived from 51–266 d.	266 d.
	18 rats[56]	Albino-Wistar	M	Avg. daily intake 1–5 mg. emulsion, stablized with small amt. Tween 80 with rice diet containing 2% Na_2CO_3.	P.O	Tumors[3344]	12 rats died or were killed between 51–266 d.	At least 266 d.

[56] Age at start: 3 mos.
[3325] First at 76 days.
[3326] Of 189 forestomach tumors: 16 epitheliomas or sarcomas, 173 papillomas (some multiple).
[3327] Dermal, pulmonary, mammary and gastric tumors developed. (Reported elsewhere).
[3328] Of forestomach tumors: 1 spindle cell sarcoma, 16 papillomas (all in females).
[3329] Untreated controls: females with 11.7%, males with 3.3%, papillomas.
[3330] Of forestomach tumors: 2 epitheliomas, 2 papillomas (female) 1 papilloma (male).
[3331] Untreated controls: females with 2.3% papillomas, males negative.
[3332] Dermal, pulmonary and gastric tumors occurred. (reported elsewhere).
[3333] Of 257 forestomach tumors: 26 epitheliomas or sarcomas, 231 papillomas (some multiple).
[3334] At 195–299 days after treatment.
[3335] At 185–384 days after treatment.
[3336] 1 lymphosarcoma, 1 adenoacanthoma. (Unrelated).
[3337] Hypophysectomized 2–3 wks. before treatment.
[3338] At 165 days after treatment.
[3339] At 279 days after treatment.
[3340] Age: 1–4 mos.
[3341] 100 mixed stock, 135 Wistar stock.
[3342] 5 Wistar and 1 mixed strain with gastric adenomatous tumors.
[3343] 1 with colonic adenocarcinoma died on 152nd day. 7 with gastric adenomas, 1 with diverticular adenomatous lesion.
[3344] Colonic adenocarcinoma considered induced.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE (Continued)								
Odashima, S., and Nakamura, K., 1955.	41 mice	d-d	F	0.3% soln. in acetone twice a wk., varying from 92–198 d.	Skin	Tumors[3345]	13 survived more than 215 d.	282 d.
	41 mice	d-d	F	0.3% soln. in acetone twice a wk., varying from 21–33 paintings.	Skin	Tumors[3346]	All died	31 wks.
Rack et al., 1955	100 mice	C57BL & strain A white.	M & F	0.01–1.0 ml. of olive oil containing 5 mg. 20-methylcholanthrene/ml.[3347].	Submucosal & subserosal inj. into the wall of the cecum.	Tumors[3348]	24 lived longer than 20 wks.	66 wks.
	50 mice	C57BL & strain A white.	M & F	Emulsion of olive oil in water (10% olive oil) containing 0.4 mg. MCA/ml., in diet.	P.O	4[3349]	Most of group died during first 3 wks., 6 lived for 6 mos.	6 mos.
	100 mice[3350]	C57BL & strain A white.	M & F	5–30 pellets 2–4 ml. in dia. containing 0.4 mg. of MCA in beeswax & carbowax mixture (at from 3–10 d. intervals).	Introduced directly into sigmoid colon & rectum by way of a distal sigmoid stoma.	0	3/4 died 3 wks. after sigmoidostomy.	160 d.
Reagan, J. W., et al., 1955	65 mice	C3H	F	1:3 in beeswax—impregnating a thread, avg. 1.15 mg. per mouse.	In uterine cervix.	Tumors[3351]	8 died in 7 wks	16 wks.
Rigdon, R. H., 1955	Ducks[3352]	White-Pekin		0.25% in acetone, 0.5–1.5 ml. daily for 30 d.	Skin, inner surface of r. wing & adjacent body region.	10 (neurogenic tumors).[3353]	3 died before end of experiment.	427 d.
	Ducks[3354]	White-Pekin		50 mg. of crystals	I.M., pectoral muscle.	2 (ganglioneuromas in pectoral muscle).	Sacrificed at end of experiment.	278 d.
	3 ducks	White-Pekin		3 mg./ml. in sesame oil. Varying from 1–3 injs.	S.C	0	2 died, at 273 & 320 d., other sacrificed.	320 d.
	8 ducks	White-Pekin		0.5–2.0 ml. in 0.25% acetone soln. daily for 30–48 d. 2 recd. 67 daily applications.	Skin	Tumors[3355]	3 survived 400 d. or more.	464 d.

[3345] 12 (60%) squamous cell carcinomas, 3 (15%) spindle cell sarcoma, 3 (15%) papillomatous hyperplasia, 2 (10%) ulceration.

[3346] 7 (64%) squamous cell carcinoma, 1 (9%) spindle cell sarcoma, 3 (27%) papillomatous hyperplasia.

[3347] 5 received 5 injections, 11 received 4, 24 received 3, remainder received 2, 8–19 wk. intervals.

[3348] 1 (3 inj.) with adenocarcinoma at 34 wks. 2 injection site squamous cell carcinomas at 36 and 48 days. 4 S.C. fibrosarcomas at 35–47 days.

[3349] Forestomach squamous cell carcinomas.

[3350] 24 survived surgery to treatment.

[3351] 46/57 survivors with uterine cervical squamous cell carcinoma. 6 with epithelial premalignant changes.

[3352] First treatment at 12 days. Includes only those (10) with neurogenic tumors. Others received same treatment.

[3353] 10 with 18 dermal tumors (4 ganglioneuromas, 12 neurofibromas, 2 pacinian corpuscle tumors).

[3354] Treated at 46 days. Includes only those (2) with neurogenic tumors. Others received same treatment.

[3355] 1 death due to tumor hemorrhage on 211th day.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE (Continued)								
	7 ducks	White-Pekin		10 mg./ml. in mineral oil. Varying from 1–3 injs.	I.M	0	4 survived 550 d. or more.	581 d.
Rudali, G., et al., 1955	26 (3 mo. old) rats.	Wistar	Both	As 15% in a 10 mg. cholesterol or paraffin pellet.	In bladder cavity.	Tumors[3356]	14 at 400 d	400 d.
Rumsfeld and Baumann, 1955.	Rats		M	0.2 ml. of 1.5% soln. of carcinogen in lard containing 2% cholesterol.	S.C	Sarcs		
Steiner, 1955	Mice	C57BL	M & F	0.02 mg. in tricaprylin	S.C., inter-scapular reg.	14 sarc. (52%).	27 at 114 d	22–28 mos.
Tedeschi, G. G., 1955	10 rats	Wistar	M	5 mg. susp. in 0.1 ml. of olive oil, once.	S.C	Sarc	Sacrificed at intervals.	110 d.
	15 rats	Wistar	M	5 mg. in 0.1 ml. of a soln. 5% sugar in NaCl 0.9%, once.	S.C	Sarc	Sacrificed at intervals.	110 d.
Akamatsu, Y., 1956	10 mice		F	As olive oil soln	Vagina	0[3357]		13 mos.
Andervont and Edgcomb, 1956.	18 mice	C3H	F	0.25% in benzene wkly. for 10 wks	Skin	Tumors[3358]		Avg. of 31 wks.
	36 mice	RIII	F	0.25% in benzene wkly. for 10 wks	Skin	Tumors[3359]		Avg. of 47 wks.
Andervont and Edgcomb, 1956.	25 mice	RIII	M	0.25% in benzene wkly. for 10 wks	Skin	Tumors[3360]		Avg. of 59 wks.
	16 mice	BALB/c	F	0.25% in benzene wkly.[3361]	Skin	Tumors[3362]		Avg. of 49 wks.
	7 mice	BALB/c	M	0.25% in benzene wkly.[3361]	Skin	Tumors[3363]		Avg. of 54 wks.
	13 mice	C57BL	F	0.25% in benzene wkly.[3361]	Skin	Tumors[3364]		Avg. of 65 wks.
	11 mice	C57BL	M	0.25% in benzene wkly.[3361]	Skin	Tumors[3365]		Avg. of 69 wks.
	8 mice	C3H	F	0.25% in benzene wkly.[3361]	Skin	Tumors[3366]		Avg. of 42 wks.
	11 mice	C3H	M	0.25% in benzene wkly.[3361]	Skin	Tumors[3367]		Avg. of 49 wks.
	197 mice	BALB/c	M & F	0.25% in benzene wkly. for 20 wks	Skin	Tumors[3368]		Avg. of 31 wks.

[3366] 4 urinary cystic (unspecified pathology). Survivors not included.
[3367] 2 with mammary tumors at 12 and 13 mos. (relationship doubtful).
[3358] 4 with papillomas, 3 with carcinomas, 1 with sarcoma, 14 with mammary tumors.
[3359] 18 with papillomas (1 regression), 12 with carcinoma, 18 with mammary tumors.
[3360] 24 with papillomas (2 regressed), 16 with carcinoma, 3 with sarcoma.
[3361] 12 weekly applications of 5% croton oil in olive oil begun 19 wks. after 10 wks. of treatment.
[3362] 15 with papillomas, 11 with carcinomas, 1 with sarcoma.
[3363] 6 with papillomas, 4 with carcinomas.
[3364] 9 with papillomas, (3 regressed), 5 with carcinomas, 1 with sarcoma.
[3365] 5 with papillomas, 3 with carcinomas.
[3366] 7 with papillomas, 2 with carcinomas, 4 with sarcomas, 5 with mammary tumors.
[3367] 100% with papillomas, 9 with carcinomas, 2 with sarcomas.
[3368] 100% with papillomas (57 multiple) (1 regression); 180 with carcinomas. (2 questionable), 10 with sarcomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE (Continued)								
	79 mice	A	M & F	0.25% in benzene wkly. for 20 wks	Skin	Tumors[3369]		Avg. of 30 wks.
	82 mice	DBA/2	M & F	0.25% in benzene wkly. for 20 wks	Skin	Tumors[3370]		Avg. of 25 wks.
	200 mice	C3H	M & F	0.25% in benzene wkly. for 20 wks	Skin	Tumors[3371]		Avg. of 28 wks.
	103 mice	C57BL	M & F	0.25% in benzene wkly. for 20 wks	Skin	Tumors[3372]		Avg. of 36 wks.
	97 mice	I	M & F	0.25% in benzene wkly. for 20 wks	Skin	Tumors[3373]		Avg. of 27 wks.
	107 mice	RIII	M & F	0.25% in benzene wkly. for 20 wks	Skin	Tumors[3374]		Avg. of 43 wks.
	48 mice	BALB/c	F	0.25% in benzene wkly. for 10 wks	Skin	Tumors[3375]		Avg. of 45 wks.
	41 mice	BALB/c	M	0.25% in benzene wkly. for 10 wks	Skin	Tumors[3376]		Avg. of 44 wks.
	17 mice	C57BL	F	0.25% in benzene wkly. for 10 wks	Skin	Tumors[3377]		Avg. of 63 wks.
	11 mice	C57BL	M	0.25% in benzene wkly. for 10 wks	Skin	Tumors[3378]		Avg. of 42 wks.
	17 mice	C3H	M	0.25% in benzene wkly. for 10 wks	Skin	Tumors[3379]		Avg. of 48 wks.
	25 mice	I	F	0.25% in benzene wkly. for 10 wks	Skin	Tumors[3380]		Avg. of 33 wks.
	24 mice	I	M	0.25% in benzene wkly. for 10 wks	Skin	Tumors[3381]		Avg. of 40 wks.
	4 mice	I	F	0.25% in benzene wkly.[3361]	Skin	Tumors[3382]		Avg. of 51 wks.
Berenblum, I., et al., 1956	30 mice	Swiss, inbred	F	0.5% soln. in undiluted polyethylene glycol-400 once.	Wall of rectum, inj.	Tumors[3383]	26 at 12 wks	37 wks.

[3361] 12 weekly applications of 5% croton oil in olive oil begun 19 wks. after 10 wks. of treatment.

[3369] 100% with papillomas (12 multiple); 69 with carcinomas (4 questionable), 7 with sarcomas.

[3370] 100% with papillomas (27 multiple); 79 with carcinomas (1 questionable), 1 with sarcoma.

[3371] 100% with papillomas (64 multiple) (1 regression). 184 with carcinomas (3 questionable), 22 with sarcomas.

[3372] 100 with papillomas (20 multiple) (2 regressed); 87 with carcinomas (2 questionable), 12 with sarcomas.

[3373] 100% with papillomas (57 multiple), 92 with carcinomas (2 questionable), 4 with sarcomas.

[3374] 100% with papillomas (15 multiple), (1 regression); 86 with carcinomas (2 questionable), 7 with sarcomas.

[3375] 40 with papillomas (1 multiple), (1 regression); 36 with carcinomas (1 questionable) 2 with sarcomas.

[3376] 38 with papillomas (3 multiple); 32 with carcinomas (1 questionable), 1 with sarcoma.

[3377] 9 with papillomas, 4 with carcinomas.

[3378] 3 with papillomas, 1 with carcinoma, 1 with sarcoma.

[3379] 14 with papillomas, 10 with carcinomas (1 questionable), 4 with sarcomas.

[3380] 15 with papillomas (3 multiple) (1 regression), 12 with carcinomas.

[3381] 22 with papillomas (3 multiple) (2 regressed), 12 with carcinomas, 1 with sarcoma.

[3382] 100% with papillomas, 4 with carcinomas.

[3383] 12 predominately invasive injection site myosarcomas. 1 invasive injection site fibrosarcoma.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE (Continued)								
	30 mice	Swiss, inbred	F	0.2 ml. of 0.5% soln. in undiluted polyethylene glycol-400 once.	Submucosa of rectum, inj.	Tumors[3384]		37 wks.
	20 mice	Swiss, inbred	F	0.05 ml. of 0.5% soln. in undiluted polyethylene glycol-400 twice a wk. for 12 wks., once a wk. thereafter.	Lumen of rectum, inj.	Tumors[3385]		37 wks.
	30 mice	Swiss, inbred	F	0.5% soln.[3386] in undiluted polyethylene glycol-400 twice a wk. for 12 wks., once a wk. thereafter.	Lumen of rectum.	Tumors[3387]	23 at 12 wks	37 wks.
Bickis, I., et al., 1956	19 mice[3388]	Pituitary dwarf strain.	M & F	0.1 cc. of a 5% soln. in acetone, once wkly. for 9 wks.	Skin	1 (5.3%) (skin tumor).[3389]	4 early deaths	164 d.
	19 mice[3388]		M & F	0.1 cc. of a 5% soln. in acetone, once wkly. for 9 wks.	Skin	12 (63.2%) (skin tumors).[3390]	17 alive at 92 d	164 d.
Biesele, J. J., et al., 1956	Mice	Swiss, albino	F	1 brush stroke of 0.3% soln. in benzene thrice wkly., Mon., Wed. & Fri.[3391]	Skin, back	([3392])		36 d.
Bonser, G. M., 1956	9 mice	IF	F	0.25 mg. in paraffin wax pellet, implanted at r. & l. 3rd & 4th breast, 4 pellets/mouse.	S.C	Tumors[3393]		Up to 31 wks.
	10 mice	IF	F	0.2 mg. in paraffin wax pellet, implanted for 17 wks.[3394]	S.C	Tumors[3395]	High mortality	Up to 29 wks.
Gillman et al., 1956 (A)	10 mice	Albino		0.8% MCA in acetone, twice wkly. for 3 wks.	Skin, sacral reg	Tumors[3396]		38 wks.
	10 mice	Albino		0.8% MCA in acetone, twice wkly. for 10 wks.[3397]	Skin, sacral reg	Tumors[3398]		38 wks.
	11 mice	Albino		0.8% MCA in acetone, twice wkly. for 10 wks.[3399]	Skin, sacral reg	Tumors[3400]		38 wks.
	8 mice	Albino		0.8% MCA in acetone, twice wkly. for 10 wks.[3399]	Skin, sacral reg	Tumors[3401]		38 wks.
	8 mice	Albino		0.8% MCA in acetone, twice wkly. for 10 wks.[3397]	Skin, sacral reg	Tumors[3402]		38 wks.

[3384] 4 invasive rectal myosarcomas (1 myosarcoma-squamous cell carcinoma). 1 mixed cell sarcoma.
[3385] 3 rectal myosarcomas (2 invasive).
[3386] Treatment soaked cotton per rectum via metal tube.
[3387] 1 invasive rectal myosarcoma. 1 rectal fibrosarcoma.
[3388] First treatment at 3–22 mos.
[3389] Injection site epidermoid tumor (questionable malignancy) at 91 days.
[3390] 15 injection site epidermoid carcinomas at 91 days. 1 pulmonary adenoma.
[3391] Dermal explants at various times.
[3392] Study of tissue culture dermal growth.
[3393] 5 mammary carcinomas.
[3394] Followed by oopherectomy.
[3395] Mammary tumors: 1 carcinoma, 3 sarcoma.
[3396] 2 (20%) with papillomas, 8 (80%) with dermal carcinomas, 5 (50%) with pulmonary tumors.
[3397] Once daily (3/wk.) applications of 95% alcohol begun 14 wks. later.
[3398] 100% with papillomas at 12 wks. 100% with carcinomas at 38 wks. 5 (50%) with primary pulmonary tumors.
[3399] Once daily (3/wk.) applications of lanolin begun 14 wks. later.
[3400] 100% with papillomas at 12 wks. 3 (27%) with papillomas only, 8 (73%) with carcinomas, 5 (45%) with primary pulmonary tumors at 38 wks.
[3401] Negative at 12 wks. 3 (38%) with carcinomas, 6 (75%) with primary pulmonary tumors, at 38 wks.
[3402] Negative at 12 wks. 3 (37%) with papillomas, 6 (60%) with carcinomas, 4 (50%) with primary pulmonary tumors, at 38 wks.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE (Continued)								
Gillman, T., et al., 1956 (B)	7 mice	Albino		0.3% MCA in acetone, twice wkly. 10 wks.[3403]	Skin, sacral reg.	4 (57%) (pulmonary adenomas).[3404]		231 d.
	8 mice	Albino		0.3% MCA in acetone, twice wkly. for 10 wks.[3405]	Skin, sacral reg.	3 (37%) (pulmonary adenomas).[3404]		231 d.
	10 mice	Albino		0.3% MCA in acetone, twice wkly. for 10 wks.	Skin, sacral reg.	5 (pulmonary adenomas).[3404]		266 d.
Gillman, T., et al., 1956 (B)	15 mice	Albino		0.3% MCA in acetone, twice wkly. for 10 wks.[3405]	Skin, sacral reg.	8 (53%) (pulmonary adenomas)[3404].		266 d.
	7 mice	Albino		0.3% MCA in acetone, twice wkly. for 10 wks.[3406]	Skin, sacral reg.	0		231 d.
	18 mice	Albino		0.3% MCA in acetone, twice wkly. for 10 wks.[3406]	Skin, sacral reg.	6 (33%) (pulmonary adenomas)[3404].		266 d.
	5 mice	Albino		0.3% MCA in acetone, twice wkly. for 10 wks.[3407]	Skin, sacral reg.	0		231 d.
Guthrie, 1956	15 rats	Albino	M	Cholesterol pellet containing 1 mg. of MCA.[3408]	R. testicular implant.	Tumors[3409]	7 alive at 2 yrs	2–2½ yrs.
	12 rats	Albino	M	Cholesterol pellet containing 1 mg. of MCA.[3410]	R. testicular implant.	1 (interstitial cell tumor of opposite testis).	8 alive at 2 yrs	2½ yrs.
	6 rats[1259]	Albino	M	Pellet of cholesterol containing 1 mg. of MCA.	S.C. implant in loin.	3[3411]		At least 30 mos.
	8 rats	Albino	M	Pellet of cholesterol containing 1 mg. MCA.[3412]	R. testicular implant.	1 (interstitial cell tumor of the l. testis).	5 alive after 1½ yrs.	2–2½ yrs.

[1259] Age: 6 mos.

[3403] Once daily (3/wk.) S.C. injections of 0.25 cc. aqueous medium, begun 2 wks. after treatment.

[3404] Most animals with primary pulmonary tumors developed dermal lesions (predominately carcinomas).

[3405] Once daily (3/wk.) applications of 1 drop 95% alcohol begun 2 wks. after treatment.

[3406] Once daily (3/wk.) applications of 1 drop cortisone suspension (100 mg./cc. 95% alcohol), begun 2 wks. after treatment.

[3407] Once daily (3/wk.) S.C. injections of aqueous cortisone (0.25 mg./cc.), begun 2 wks. after treatment.

[3408] Right abdominal orchiopexy at 1 mo. Pellet implant 1 mo. later.

[3409] 2 with testicular tumor (inoculated organ). 1 with tubule cellular changes (inoculated organ).

[3410] Right abdominal orchiopexy at 6 mos. Pellet implant 7 mos. later.

[3411] Implant site spindle cell sarcomas. Minimum latency period 1 yr.

[3412] Right abdominal orchiopexy concurrent with pellet implant.

[3413] 2 left testicular interstitial cell tumors. 1 extra-testicular tumor.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE (Continued)								
	79 rats	Albino	M	Pellet of cholesterol containing 1 mg. MCA.	R. testicular implant.	3[3413]	42 alive after 1½ yrs.	Between 2 & 2½ yrs.
	6 rats[1259]	Albino	F	Pellet of cholesterol containing 1 mg. of MCA.	Implant into S.C. tissue of the loin.	5[3411]		At least 30 mos.
Kotin, P., et al., 1956	30 mice [1019]	C57	M	30 μg. in ethyl laurate soln	S.C	Tumors[3414]	29 at 21 wks	12 mos.
Kuhn, O., & Koecke, H. U., 1956.	Mice	Albino		1 mg. in Agar	S.C	Tumors[3415]		At least 237 d.
Kuschner, M., et al., 1956	69 mice	Swiss		42.0 mg./m.³ as 1% soln. in corn oil 1 hr./d., 5 times/wk. for 170–267 d.	Inhalation	Tumors[3416, 3417]		534–772 d.
	56 mice	C57		42.0 mg./m.³ as 1% soln. in corn oil 1 hr./d., 5 times/wk., for 170–267 d.	Inhalation	Tumors[3418, 3419]		534–772 d.
	56 rats	Albino		42.0 mg./m.³ as 1% soln. in corn oil 1 hr./d., 5 times/wk., for 170–267 d.	Inhalation	0		534–772 d.
	19 rats	Albino		42.0 mg./m.³ as 1% soln. in corn oil 1 hr./d., 5 times/wk., for 170–267 d.	Inhalation	0		534–772 d.
	120 mice & 32 rats.	Swiss mice, albino rats.		20.0 mg./m.³ as 1% soln. in corn oil 1 hr./d., 5 times/wk., for 154 d.	Inhalation	0		154 d.
	12 rats	Albino		41.1 mg./m.³ as 1% soln. in corn oil 1 hr./d., 5 times/wk., for 76 d.	Inhalation	0		560 d.
	13 rats			MCA-impregnated thread implanted in lung, thru thoracotomy, for 385 d.	Lung trans-fixion.	Tumors[3420, 3421]	11 died	2 animals still alive.
	Mice	Swiss		0.10 ml. of 1.5 mg/ml. in saline susp. repeated in monthly doses.	Intratracheal inj.	Tumors[3422]	108 autopsied	At least 243 d.
	Mice	CF		0.10 ml. of 1.5 mg./ml. in saline susp. repeated in monthly doses.	Intratracheal inj.	Tumors[3423]	28 autopsied	At least 139 d.
	44 mice			MCA-impregnated cotton thread implanted in lung thru incision down to parietal pleura.	Lung trans-fixion.	Tumors[3424]		At least 168 d.
	20 mice & 6 rats.	Swiss mice, albino rats.		0.097 mg./m.³ in saline susp. for 1 hr	Inhalation	0		500–936 d.

[1019] Age: 3–4 months.
[1259] Age: 6 mos.
[3411] Implant site spindle cell sarcomas. Minimum latency period 1 yr.
[3414] 8 S.C. spindle cell sarcomas at 21–34.5 wks.
[3415] Sarcomas.
[3416] 6 pulmonary adenomas at avg. 237 days. 17 dermal papillomas or carcinomas at avg. 180 days.
[3417] 40 untreated controls negative.
[3418] 3 dermal papillomas or carcinomas at avg. 227 days.
[3419] 10 untreated controls negative.
[3420] 5 with pulmonary squamous carcinoma (some metastases). First tumor at 270 days.
[3421] Thread controls alive at 350 days.
[3422] 30 pulmonary adenomas at avg. 243 days. 6 paratracheal sarcomas at avg. 178 days.
[3423] 4 pulmonary adenomas at avg. 139 days. 2 paratracheal sarcomas at avg. 120 days
[3424] 4.5% with pulmonary squamous cell carcinomas (some metastases) at avg. 142 days. 1 tracheal squamous cell carcinoma. 63.6% pulmonary invasive S.C. fibrosarcomas at avg. 165 days. 22.7% pulmonary adenomas at avg. 168 days.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE (Continued)								
	12 rats	Albino		30.0 mg./m.^{3} as 1% soln. in paraffin for 1 hr.	Inhalation	0		700 d.
	48 rats	Albino		50.2 mg./m.^{3} as pure fume for 1 hr	Inhalation	0		742 d.
	Mice	Swiss		0.01 ml. of 0.15 mg./ml. in saline susp. once.	Intratracheal inj.	Tumors[3425]	24 autopsied	At least 426 d.
	Mice	Swiss		0.10 ml. of 1.5 mg./ml. in saline susp. once.	Intratracheal inj.	Tumors[3426]	20 autopsied	At least 148 d.
	Mice	C57		0.10 ml. of 1.5 mg./ml. in saline susp. once.	Intratracheal inj.	Tumors[3427]	17 autopsied	At least 347 d.
	Mice	Swiss		0.10 ml. of 1.5 mg./ml. in saline susp. twice at a 2 wk. interval.	Intratracheal inj.	Tumors[3428]	32 autopsied	At least 385 d.
	10 rats			3–5 mg. in cylindrical stainless-steel wire mesh pellet.	L. inferior bronchus implant.	Tumors[3429]		At least 634 d.
	60 mice	Swiss		0.033–0.083 mg./m.^{3} as susp. in saline for 1 hr./d., 5 times/wk. for 98 d.	Inhalation	0		769–936 d.
	18 rats	Albino		0.175 mg./m.^{3} as susp. in saline for 1 hr./d., 5 times/wk. for 98 d.	Inhalation	0		769–936 d.
Kuschner, M., et al., 1956	10 rats			3–5 mg. in cylindrical stainless-steel wire mesh pellet.	Thigh implant	Tumors[3431]		
	Rats			Unspecified amt. in pellet	Implanted in bronchi.	0[3432]		Still in progress.
Maschio, C., and Sesenna, R., 1956.	40 rats[3433]		M	Fragments of prostate from other rat, impregnated with crystals of MCA.	Intraprostatic auto-implant.	Tumors of prostate[3434].	Sacrificed at intervals.	170 d.
	10 rats		M	As crystals	Intraprostatic implant.	Tumors of prostate[3435].	Sacrificed at intervals.	150 d.
Miller, E. W., and Pybus, F. C., 1956.	799 mice	(CBA x NBT) F_{1-10}.	M & F	1.0 mg. in 0.1 cc. sesame oil once	S.C. r. flank	0[3436,3437]	Avg. 12.7 mos	28 mos.
	1125 mice	(NBT x CBA) F_{1-10}.	M & F	1.0 mg. in 0.1 cc. sesame oil once	S.C. r. flank	0[3436,3437]	Avg. 15.2 mos	32 mos.
	26 mice	CBA	M & F	1.0 mg. in 0.1 cc. sesame oil once	S.C. r. flank	0[3438]		27 mos.

[3425] 4 pulmonary adenomas at avg. 426 days.
[3426] 1 pulmonary adenoma at avg. 148 days. 1 injection site paratracheal sarcoma at avg. 88 days.
[3427] 1 pulmonary adenoma at avg. 347 days.
[3428] 11 pulmonary adenomas at avg. 385 days. 2 paratracheal sarcomas at avg. 88 days.
[3429] 3 pulmonary squamous cell carcinomas at 285, 548, 634 days.
[3430] Pellet controls negative.
[3431] 7 sarcomas.
[3432] Negative at 30 wks.
[3433] 20 castrated.
[3434] 5 non-castrates with squamous cell carcinomas; 4 castrates with squamous cell carcinomas, 2 with adenocarcinomas, at 150–170 days.
[3435] 2 with squamous cell carcinoma at 120–150 days.
[3436] Gastric tumors, comparable to controls.
[3437] Dermal, pulmonary, mammary and forestomach tumors at variable latent periods; reported elsewhere.
[3438] Dermal, pulmonary, and forestomach tumors; reported elsewhere.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE (Continued)								
	26 mice	NBT	M & F	1.0 mg. in 0.1 cc. sesame oil once	S.C r. flank	Tumors[3439, 3440].	Avg. 15.0 mos.—tumor bearing.	18 mos.
Mirand, E. A., 1956	122 rats	Wistar	M	Crystals deposited in pocket	Ventral intraprostatic inj.	Tumors[3441]	23 died early	350 d.
Mirand, E., and Staubitz, W., 1956.	122 rats	Wistar inbred	M	Crystals deposited in pocket	Ventral intraprostatic inj.	35[3442]	23 died early	At least 350 d.
	122 rats[56]	Wistar	M	Unspecified amt. as crystals	L. intraprostatic inj.	Prostatic Tumors [3443, 3444].	23 died very early	At least 350 d.
Nakamura, Y., 1956	47 rats	Cross-bred	M & F	40% cholesterol pellet	R. cerebral hemisphere.	Tumors[3445]		At least 300 d.
Nystrom, Bj., and Teir, H., 1956.	Mice	White		Scarified once a wk. over different areas of interscapular region, painted with a 0.3% soln. twice a wk.[3446] for 4 mos.	Skin	Tumors[3447]	4 died during experiment.	16 wks.
	Mice	White		Painted twice a wk. with a 0.3% soln. for 4 mos.	Skin	Tumors[3448]	6 died during experiment.	16 wks.
	Mice	White		Scarified once a wk. over same area of interscapular region, painted with a 0.3% soln. twice a wk.[3446] for 4 mos.	Skin	Tumors[3449]	6 died during experiment.	16 wks.
O'Connor, R. J., 1956	66 mice		M & F	5% concentration in a paraffin pellet 2 mm. in dia. & less than 1 mm. thick.	Anal canal[3450]	14[3451]		At least 180 d.
	Mice		M & F	5% conc. in a paraffin wax pellet about 2 mm. in dia. & less than 1 mm. thick.	Anal canal[3452]	0		At least 83 d.
Odashima, S., 1956	40 mice	d-d		1 mg. in carboxy methyl cellulose once.	S.C	Tumors[3453]		At least 180 d.
	30 mice	d-d	F	1 mg. in carboxy methyl cellulose once.	S.C	Tumors[3454]		At least 190 d.

[56] Age at start: 3 mos.

[3439] 2 of gastric tumors.

[3440] Dermal, pulmonary, mammary and forestomach tumors; reported elsewhere.

[3441] 30 squamous cell carcinomas, 3 leiomyosarcomas (2 mixed). 3 adenocarcinomas and 20 squamous cell carcinomas metastasized.

[3442] Prostatic tumors: 2 adenocarcinomas with metastases, 30 squamous cell carcinomas with metastases, 3 leiomyosarcomas (2 mixed).

[3443] 2 adenocarcinomas with metastases. 30 squamous cell carcinomas with metastases. 3 leiomyosarcomas (2 mixed). Squamous cell carcinomas transplanted and metastasized.

[3444] 24 untreated controls negative.

[3445] 16 brain tumors (2 mixed): 3 meningiomas, 2 astrocytomas, 2 glioblastomas, 1 choroid plexus papilloma, 1 oligodendroglioma, 1 spongioblastoma, 1 cholesteatoma, 1 astroblastoma, 1 subependymoma.

[3446] Scarification alternated with application. Scarification suspended when papillomas occurred.

[3447] 5 (31%) with papillomas. 11 (69%) with squamous cell carcinomas. Avg. latent period 58.2±3.9 days. Hepatic inflammation and necrosis.

[3448] 2 (14%) with papillomas. 12 (86%) with squamous cell carcinomas. Avg. latent period 53.6±4.6 days. Hepatic inflammation and necrosis.

[3449] 2 (14%) with papillomas. 2 (14%) with squamous cell carcinomas. Avg. latent period 64.9±3.2 days. Hepatic inflammation and necrosis.

[3450] Pellet implant at rectal mucocutaneous junction extruded after minimum of 21 days.

[3451] 8 anal squamous epithelial papillomatous lesions; 6 anal squamous cell epithelial tumors.

[3452] Pellet implant at rectal mucocutaneous junction; remained for duration.

[3453] 28 with injection site tumors (6 squamous cell carcinomas, 14 spindle cell sarcomas, 5 myofibrosarcomas). Experiment not terminated.

[3454] 2 squamous cell carcinomas, 16 spindle cell sarcomas, 3 myofibrosarcomas. Experiment not terminated.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE (Continued)								
Orr, J. W., 1956	12 mice[3465]	1 F	F	8 fortnightly applications	Skin	0		
	12 mice[3466]	1 F	F	8 fortnightly applications	Skin	Tumors[3467]		
	19 mice	1 F	F	8 fortnightly applications	Skin	Tumors[3468]		
	21 mice	1F x A	F	8 fortnightly applications	Skin	Tumors[3469]		
	4 mice	1F x C57	F	8 fortnightly applications	Skin	Tumors[3460]		
Peacock and Peacock, 1956	5 chickens	White Leghorn	M	0.5 ml. of 5% (W/V) MCA in arachis oil, 3 times, at 5 to 6 mos. intervals.[3461]	S.C., wall of the crop.	2[3462]	First killed at 13 mos., last killed at 37 mos.	37 mos.
	4 chickens	White Leghorn	F	0.5 ml. of 5% (W/V) MCA in arachis oil, 3 times, at 5 to 6 mos. intervals.[3463]	S.C., wall of the crop.	2[3464]	First killed at 20 mos., last killed at 66 mos.	66 mos.
Rigdon, R. H., 1956	10 ducks[3466]	White Pekin		0.5 ml. of 0.25% soln. in acetone for 20 consecutive d.[3466]	Skin	Tumors[3467]		About 155 d.
	15 ducks[3468]	White Pekin		0.25% soln. in acetone[3469]	Skin	Tumors[3470]		42–227 d.
	5 ducks[3471]	White Pekin		0.5 ml. of 0.25% soln. in acetone given once.[3472]	Skin	0		About 217 d.
	15 ducks[3473]	White Pekin		2 drops of a 0.25% soln. in acetone 5 times wkly. for 6 wks.	Skin, undersurface of the bill.	7 (pap.)[3474]	Killed at intervals	211 d.
	15 ducks[3473]	White Pekin		4 drops of a 0.25% soln. in acetone 5 times/wk. for 6 wks.	Skin, webb of each foot.	Tumors[3476]	Sacrificed at intervals.	239 d.
	14 ducks[3465]	White Pekin		0.25% soln. in acetone	Skin	Tumors[3476]		42–227 d.
	29 ducks[3465]	White Pekin		0.25% soln. in acetone[3477]	Skin	Tumors[3478]		42–227 d.
	10 ducks[3466]	White Pekin		0.5 ml. of 0.25% soln. in acetone for 30 consecutive d.[3479]	Skin	Tumors[3480]		About 165 d.

[3455] Breeding and nursing.
[3456] Breeding after treatment.
[3457] 3 with litters had mammary carcinomas.
[3458] 14 mammary tumors, 1 ovarian granulosa cell tumor.
[3459] 13 mammary tumors, 1 ovarian granulosa cell tumor.
[3460] 1 mammary tumor, 2 ovarian granulosa cell tumors.
[3461] After 3 initial injections, survivors treated with increasing frequency. Total doses: 5 mg., 10 mg., 45 mg., 30 mg., and 60 mg. based on survival time.
[3462] 1 with injection site anaplastic carcinoma (received 30 mg. MCA). 1 with injection site fibrosed cysts (received 65 mg. MCA).
[3463] After 3 initial injections, the survivors treated with increasing frequency. Total doses: 15 mg., 100 mg. and 120 mg. based on survival time.
[3464] 1 with hepatoma and renal adenomatous lesions. 1 with primary proventricular adenocarcinoma with mesenteric metastases.
[3465] Age: 17 days.
[3466] 3 with feathers plucked weekly for 3 mos. beginning 45 days later.
[3467] 3 plucked ducks developed hemangiomas, fibromas, papillomas. 3 non-plucked ducks developed hemangiomas and fibromas.
[3468] Age: 14 days.
[3469] Feathers plucked weekly after treatment.
[3470] 14 with 38 hemangiomas; first at 84th day. 13 with papillomas; first at 43rd day. 8 with 14 fibromas; first at 52nd day.
[3471] Age: 20 days.
[3472] Feathers plucked weekly for 3 mos. beginning 127 days later.
[3473] Age: 27 days.
[3474] Treatment site tumors at 46–80 days after first treatment.
[3475] 9 with papillomas at 73–115 days. 10 with hemangiomas at 73–127 days.
[3476] 7 with 17 hemangiomas; first at 106th day. 14 with papillomas; first at 46th day. 3 with fibromas; first at 60th day.
[3477] Feathers plucked just prior to application. Plucking continued weekly during treatment, continued until end.
[3478] 26 with 92 hemangiomas; first at 60th day. 26 with papillomas; first at 36th day. 8 with 13 fibromas; first at 36th day.
[3479] 1 had feathers plucked weekly for 3 mos.; begun 45 days later.
[3480] Plucked animal developed hemangiomas and fibromas. 6/9 unplucked ducks developed papillomas, hemangiomas and fibromas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE (Continued)								
	10 ducks[3471]	White Pekin		0.5 ml. of 0.25 soln. in acetone given once.[3481]	Skin	0		About 217 d.
	10 ducks[3471]	White Pekin		0.5 ml. of 0.25% soln. in acetone given twice.[3481]	Skin	0		About 217 d.
	10 ducks[3471]	White Pekin		10 doses of 0.5 ml. of 0.25% soln. in acetone.[3481]	Skin	0		About 227 d.
	10 ducks[3465]	White Pekin		0.5 ml. of 0.25% soln. in acetone for 10 consecutive d.[3482]	Skin	Tumors[3483]		About 145 d.
Rigdon, R. H., 1956	10 ducks[3473]	White Pekin		2 drops of a 0.25% soln. in acetone 5 times/wk. for 1 wk.	Skin, undersurface of bill.	1 (pap.)[3484]	6 killed before 128 d.	136 d.
Rigdon & Hooks, 1956	Chickens[3485]	White Leghorn	M & F	0.2 ml. soln. in acetone 6 d./wk. for 30 d. (dose gradually increased to 1.0 ml. as birds increased in size).	Undersurface of r. wing & skin of body beneath this wing.	4[3486]	First died at 25 d	140 d.
	Chickens[3487]	White Leghorn	M	0.2 to 1.0 ml. (depending on size of animal) of a 0.25% soln. in acetone, 5 d./wk. for total of 30 applications.	Undersurface of r. wing and skin of body beneath this wing.	2[3488]	First died at 101 d.	139 d.
	Chickens[3489]	Single-combed white Leghorn.	M	0.2 to 1.0 ml. (depending on size of animal) of a 0.25% soln. in acetone 5 d./wk. for total of 30 applications[3490]	Undersurface of r. wing & body skin beneath this wing.	5[3491]	3 alive at 100 d	124 d.
	Chickens[3492]	Single-combed white Leghorn.	M & F	0.2 to 1.0 ml. (depending on size of animal) of a 0.25% soln. in acetone, 5 d./wk. for total of 30 applications.[3493]	Undersurface of r. wing & body skin beneath this wing.	6[3494]	3 alive at 100 d	127 d.
Rigdon, R. H., et al., 1956	Young ducks.[3495]	White Pekin		0.5 to 2.0 ml. (depending on size of animal) of a 0.25% soln. in acetone, daily for 30 d.	Skin, inner surface of r. wing & body skin beneath this wing.	Hemangiomas.[3496]		
Riska, E. B., 1956	30 mice	Albino	M	0.0005% dissolved in 6.25% aqueous soln. polyethylene glycol 600 thrice a wk. for 35 wks.	Skin	0	10 at 25 wks	35 wks.

[3465] Age: 17 days.
[3471] Age: 20 days.
[3473] Age: 27 days.
[3481] 5 had feathers plucked weekly for 3 mos.; begun 127 days later.
[3482] 4 had feathers plucked weekly for 3 mos.; begun 45 days later.
[3483] 2 plucked animals developed hemangiomas and fibromas.
[3484] Treatment site tumor at 115 days.
[3485] Age at first treatment 4 days.
[3486] 10 squamous cell carcinomas (avg. 4.9 mm.) (spontaneous regression).
[3487] Age at first treatment 38 days.
[3488] Squamous cell carcinomas (avg. 4.5 mm.) (spontaneous regression).
[3489] Age at first treatment 77 days.
[3490] Daily I.M. injections (50 days/wk.) of cortisone acetate (25 mg./ml./bird) begun at 67–88 days, continued until death. (avg. 28 days).
[3491] 17 squamous cell carcinomas, (spontaneous regression).
[3492] Age at first treatment 35 days.
[3493] 2 received daily (5 days/wk. for 23 days). I.M. injections of cortisone acetate (25 mg./ml./bird).
[3494] 15 squamous cell carcinomas (avg. 5.07 mm.) (spontaneous regression).
[3495] Age: 2–6 wks.
[3496] Study of MCA induced tumors. Approx. 95% incidence. 21 with 84 hemangiomas (31 wing, 30 body wall, 21 foot web, 2 periorbital).

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE (Continued)								
	30 mice	Albino	M	0.0005% dissolved in 6.25% aqueous soln. polyethylene glycol 1500 thrice a wk. for 35 wks.	Skin	0	24 at 25 wks	35 wks.
	50 mice	Albino	M	0.003% dissolved in 6.25% aqueous soln. polyoxyethylene sorbitan monolaurate[3497] thrice a wk. for 35 wks.	Skin	Tumors[3498]	40 at 25 wks	35 wks.
	50 mice	Albino	M	0.003% dissolved in 6.25% aqueous soln. polyoxyethylene sorbitan monopalmitate[3499] thrice a wk. for 35 wks.	Skin	Tumors[3498]	34 at 25 wks	35 wks.
	50 mice	Albino	M	0.003% dissolved in 6.25% aqueous soln. polyoxyethylene sorbitan monostearate[3500] thrice a wk. for 35 wks.	Skin	Tumors[3501]	42 at 25 wks	35 wks.
	50 mice	Albino	M	0.003% dissolved in 6.85% aqueous soln. polyoxyethylene sorbitan monooleate thrice a wk. for 35 wks.	Skin	0	40 at 25 wks	35 wks.
	30 mice	Albino	M	0.003% dissolved in 6.25% aqueous soln. polyethylene glycol 400 thrice a wk. for 35 wks.	Skin	0	28 at 25 wks	35 wks.
	30 mice	Albino	M	0.003% dissolved in 6.25% aqueous soln. polyethylene glycol 600 thrice a wk. for 35 wks.	Skin	0	18 at 25 wks	35 wks.
	30 mice	Albino	M	0.003% dissolved in 6.25% aqueous soln. polyethylene glycol 1500 thrice a wk. for 35 wks.	Skin	0	23 at 25 wks	35 wks.
	50 mice	Albino	M	0.003% dissolved in 6.25% aqueous soln. sodium dodecylsulfate thrice a wk. for 35 wks.	Skin	0	43 at 25 wks	35 wks.
	50 mice	Albino	M	0.003% dissolved in 6.25% aqueous soln. zephirol thrice a wk. for 35 wks.	Skin	0	34 at 25 wks	35 wks.
	30 mice	Albino	M	0.0005% dissolved in 6.25% aqueous soln. polyethylene glycol 400 thrice a wk. for 35 wks.	Skin	0	24 at 25 wks	35 wks.
Rudali, G., et al., 1956	40 mice (2.5 mos. old).	NLC	M	1 mg. in 0.2 ml. peanut oil, 1 wkly. for 10 wks.	Gastric tube	Tumors[3503]	36 at 120 d	1 a yr.
Sato, A., 1956	5 rats	Wistar King A (F155).		0.5% MCA in olive oil, 0.25 cc./30 gms. body wt. 2 times at 1 mo. interval.	S.C. (back)	Tumors[3504]	1 died on 37 d	At least 180 d.

[3497] Tween 20.
[3498] 1 (3%) with papillomas at 35 wks.
[3499] Tween 40.
[3500] Tween 60.
[3501] 2 (6%) with papillomas at 35 wks.
[3502] Tween 80.
[3503] 6 leukemia, 27 pulmonary adenoma.
[3504] 4 transplantable spindle cell sarcomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE (Continued)								
Schlumberger, 1956	16 shell parakeets.[3505]			0.5 mg. of crystalline MCA	S.C. implant, l. breast reg.	0	9 alive at 430 d	Not completed.
	15 shell parakeets.[3505]		M	3% soln. in benzene, twice wkly. for 270 d.	Skin, l. breast reg.	9 (skin tumors).[3506]	7 alive at 270 d	535 d.
	13 shell parakeets.[3505]		F	3% soln. in benzene, twice wkly. for 270 d.	Skin, l. breast reg.	8 (skin tumors).[3507]	4 alive at 270 d	388 d.
	10 shell parakeets.[3505]			1 inj. of 3% soln. in benzene	S.C.	0[3508]	6 died within 24 hrs.	497 d.
	32 shell parakeets.[3505]		16 M, 16 F	0.15 cc. of a 3% soln. in sesame oil	I.M., & S.C., r. or l. brcast.	0[3509]	12 alive at 178 d	495 d.
	30 parakeets	Melopsittacus undulatus.		3% soln. in benzene twice wkly. up to 240 d.	Skin, breast	Tumors[3510]	27 from 123–535 d.	535 d.
Shay, H., et al., 1956	55 rats	Wistar	F	2 mg. in 0.5 cc. olive oil daily, 6 times/wk. avg. treatment period 162 d. before development of 1st tumor.	P.O.	Tumors[3511]	Throughout experiment.	At least 162 d.
	14 rats	Wistar	M	2 mg. in 0.5 cc. olive oil daily, 6 times/wk. 342 d. before development of 1st tumor.	P.O.	Tumors[3512]	Throughout experiment.	At least 342 d.
	14 rats	Wistar	M	2 mg. in 0.5 cc. olive oil daily, 6 times/wk. 352 d. before development of 1st tumor.	P.O.	Tumors[3513]	Throughout experiment.	At least 352 d.
Spain, D. M., et al., 1956	39 mice[1032]	BALB/c	19 M, 20 F	0.6% w/v soln. in benzene, twice wkly. for 6 wks.[3514]	Skin, back	93% with pap., 59% with skin carc.	10 early deaths[3515]	40 wks.
	32 mice[1032]	BALB/c	18 M, 14 F	0.6% w/v soln. in benzene, twice wkly. for 6 wks.[3516]	Skin, back	87% with pap., 74% with skin carc.	9 early deaths[3517]	40 wks.
	30 mice[1032]	BALB/c	15 M, 15 F	0.6% w/v soln. in benzene, twice wkly. for 6 wks.	Skin, back	63% with pap., 47% with skin carc.		40 wks.

[1032] Age: 6–8 weeks.
[3505] Age at first treatment 5 mos. (avg.).
[3506] 2 with papillomas only (1 multiple). 5 with multiple papillomas and 1 carcinoma. 2 with multiple papillomas and multiple carcinomas.
[3507] 4 with papillomas only (3 multiple). 4 with multiple papillomas and 1 carcinoma.
[3508] 2 with pituitary tumors (probably unrelated).
[3509] 1 pituitary tumor, 1 renal fibrosarcoma (probably unrelated).
[3510] Multiple papillomas and carcinomas; first at 100 days.
[3511] 1955 series: 43 (78%) with 80 mammary tumors (76 adenocarcinomas, 3 fibroadenomas, 1 collagenous tumor).
[3512] 1952 series: 43% with mammary tumors (1 adenocarcinoma, 4 spindle cell sarcomas, 1 fibroadenoma). * In previous file (1952).
[3513] 1955 series: 43% with 9 mammary tumors (1 spindle cell sarcoma, 5 collagenous tumors, 3 unidentified tumors.
[3514] Daily S.C. injections of 0.2 mg. cortone acetate for 5 days before and 10 days after treatment; continued 3 times weekly until end.
[3515] 10 excluded from papilloma and 2 from carcinoma incidence calculations due to death.
[3516] Daily S.C. injections of 0.2 mg. cortone acetate for 5 days prior and 10 days after treatment; continued 3 times/wk. for 4 wks.
[3517] 9 excluded from papilloma incidence calculations due to death.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE (Continued)								
Usubucai, I., 1956	20 rats	Albino		10 mg./0.2 cc. olive oil	S.C	Tumors[3518]	3 died	5½ mos.
Weissenfels, N., 1956	10 adult mice	DBA	F[198]	4 drops of a 0.03% soln. in propanol twice/wk. on back.	Skin	Tumors[3519]		30 wks.
	10 mice	DBA	F	4 drops of a 0.03% soln. in propanol twice/wk. on back.	Skin	Tumors[3519]		30 wks.
Wolfson, S. L., et al., 1956	21 rats	Long-Evans	F	4 mg. in 1 cc. olive oil given once	S.C	Tumors[3520]		322 d.
Yoshida, T., et al., 1956	50 mice	d-d	F	1 mg. in carboxy methyl cellulose once.	S.C	Tumors[3521]		At least 183 d.
	25 mice	d-d	F	1 mg. in carboxy methyl cellulose once.	S.C	Tumors[3522]		At least 225 d.
Berenblum, I., and Haran-Ghera, N., 1957.	Mice	Swiss	F	0.3 ml. of 1.0% soln. in polyethylene glycol-400 once.[3523]	P.O., stomach tube.	Tumors[3524]	25 at end of experiment.	At least 32 wks.
Blacklock, J. W. S., 1957	6 rats	CB white		3 pellets containing total of 5.835 mg. mc & 5.835 mg. cholesterol.	L. intra-pulmonary insert.	Tumors[3525, 3525].	Mean survival 275.7 d.	326 d.
	6 rats	CB white		3 mg. in 0.15 ml. olive oil once	L. intra-pulmonary inj.	Tumors[3527, 3528].	Mean survival 303 d.	500 d.
	6 rats	CB white		3 mg. in 0.15 ml. olive oil once plus 0.01 mg. dead human tubercle bacilli.	L. intra-pulmonary inj.	Tumors[3529, 3530].	Mean survival 265.5 d.	304 d.
Cuendet, J. F., et al., 1957	1 rabbit			2.16 μg. to the choroid coat of the eye.	IV (vorticosa)	0		6 mos.
	1 rabbit			3.8 μg. to the choroid coat of the eye.	IV (vorticosa)	0		9 mos.
	2 rabbits			2.7 μg. to the choroid coat of the eye.	IV (vorticosa)	0		5 mos.
	2 rabbits			330 μg. (0.1 ml.) in oil to the choroid coat of the eye.	IV (vorticosa)	0		5 mos.
	1 rabbit			264 μg. (3.3 mg./ml) in oil to the choroid coat of the eye.	IV (vorticosa)	0		4 mos.
	1 rabbit			1.6 μg. to the choroid coat of the eye.	IV (vorticosa)	0		8½ mos.
	2 rabbits			5.4 μg. to the choroid coat of the eye.	IV (vorticosa)	0		8 mos.

[198] Castrated.
[3518] 18 with tumors.
[3519] 10 papillomas.
[3520] 21 (100%) with fibrosarcomas at 205 days.
[3521] 9 squamous cell carcinomas, 23 spindle cell sarcomas, 7 myofibrosarcomas.
[3522] 10 with tumors.
[3523] 64 semiweekly applications of 5% croton oil in paraffin.
[3524] 20 with papillomas, (avg. 3+/mouse). 2/21 croton oil controls with papillomas, (avg. .09+/mouse).
[3525] 4 sarcomas, 1 squamous cell carcinoma with pulmonary metastases.
[3526] Cholesterol pellet controls negative.
[3527] 5 with sarcomas, 1 with pulmonary carcinoma.
[3528] Olive oil controls negative.
[3529] 4 pulmonary sarcomas (2 with metastases).
[3530] Olive oil and bacilli controls negative.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE (Continued)								
	2 rabbits			10 μg. to the choroid coat of the eye.	IV (vorticosa)	0		8 mos.
	1 rabbit			3 μg. to the choroid coat of the eye.	IV (vorticosa)	0		8 mos.
Dannenberg, H., 1957	9 mice[2894]		4 M, 5 F	0.4% in benzene twice wkly. for 35 wks.	Nape of neck (skin).	Tumors[3531]	9 at 227 d	
	15 mice[2894]		5 M, 10 F	1 mg. in 0.2 ml. sesame oil	S.C	Tumors[3532]	13 at 137 d	
Franks, L. M., and Chesterman, F. C., 1957.	4 hamsters	Golden	M	1.0 mg. in lubafax jelly every 3 mos. or longer up to 24 mos.	Implant, dorsal prostate.	Tumors[3533]		24 mos.
Hlavayová, E., 1957	20 rats	Wistar		1 mg. in 0.5 ml. sunflower seed oil every 2nd d. for 9 mos.	P.O., stomach tube.	Tumors[3534]	9 at 550 d.	550 d.
Horava, A., and von Haam, E., 1957.	62 rats	Wistar		Implantation of chemically impregnated strings.	Ceco-appendices.	Tumors[3535]	Killed at intervals	11 mos.
Horton, W. A., et al., 1957	16 mice	C3H		100 mg. of 0.17% in t-Dodecylbenzene thrice wkly.	Skin	Tumors[3536]		At least 8 wks.
	19 mice	C3H		100 mg. of 0.70% in sec-amylbenzene thrice wkly.	Skin	Tumors[3537]		At least 15 wks.
	20 mice	C3H		100 mg. of 0.18% in sec-amylbenzene thrice wkly.	Skin	Tumors[3538]		At least 26 wks.
	20 mice[3539]	C3H		100 mg. of 0.17% in benzene thrice wkly.	Skin	Tumors[3538]		At least 15 wks.
	17 mice	C3H		100 mg. of 0.09% in sec-amylbenzene thrice wkly.	Skin	Tumors[3540]		At least 40 wks.
Klein, E., et al., 1957	Mice	A/SN + A/SW		0.1 ml. of 1 mg. dissolved in trioctanoin.	S.C. r. thigh	Tumors[3541]		4 mos.
Kuhn, O., and Koecke, H. U. 1957.	55 mice	Inbred	M & F	5% susp. in 4% agar, total dose 0.4 mg.	Attached to liver.	Tumors[3542]	46 at 40 d	295 d.
Maltoni, C., and Prodi, G., 1957.	16 rats	Albino	M & F	0.3 ml. of 1% soln. in trioctanin, once.	S.C	Tumors[3543]	Sacrificed at intervals.	Up to 135 d.
	12 rats	Albino	M & F	0.2 ml. of 2% soln. in olive oil, once	S.C	Tumors[3544]	Sacrificed at intervals.	Up to 200 d.
Marchant, J., 1957	4 mice[3545]	IF x C57BL	F	0.5% soln. in olive oil at fortnightly intervals.	Skin	Tumors[3548]	12.2 mos. mean	12.2 mos. mean.

[2894] Age: 3–4 mos.
[3531] 7 epitheliomas.
[3532] 11 spindle cell sarcomas, 1 epithelioma.
[3533] 1 with adrenocortical tumor. Additional data to be reported elsewhere. Untreated control with adrenal nodular hyperplasia.
[3534] 1 mammary fibroadenoma. Untreated controls not recorded.
[3535] Intraepithelial carcinomas at 14–48 wks.; 19 with invasive colonic carcinomas.
[3536] 16 with papillomas.
[3537] 19 with papillomas.
[3538] 20 with papillomas.
[3539] "Effective total".
[3540] 13 with papillomas.
[3541] Sarcomas.
[3542] 12 spindle cell sarcomas, 2 polymorphic cell sarcomas.
[3543] Histological study. Sarcomas at 135 days.
[3544] Histological study. Sarcomas at 200 days.
[3545] At 4 mos.
[3546] 2 with ovarian granulosa cell tumor; 1 mammary tumor.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE (Continued)								
	21 mice[3545]	IF x A	F	0.5% soln. in olive oil at fortnightly intervals.	Skin	Tumors[3547]	13.5 mos. mean	13.5 mos. mean.
	19 mice[3545]	IF	F	0.5% soln. in olive oil at fortnightly intervals.	Skin	Tumors[3548]	10 mos. mean	10 mos. mean.
Norden, G., 1957	18 mice	D-Z	9 āā	3% soln. in Tween 20 once wkly. for 4 wks., off 1 mo., repeat for 3 wks.	P.O., stomach tube.	Tumors[3549]	13 at 300 d	669 d.
Prehn, R., and Main, J. M., 1957.	Mice	Inbred, F_1 hybrid.	M & F	A few crystals or as 5 & 10% in paraffin or cholesterol pellets.	S.C. implant	Tumors[3550]		
Prodi, G., and Maltoni, C., 1957.	3 rabbits	Albino		0.3% acetone soln. twice wkly	Skin, l. flank	Tumors[3551]		Up to 116 d.
	6 rats	Albino		0.3% in acetone, painted twice wkly. for 65 d.	Skin	0		65 d.
Prokof'eva, E. I., 1957	Rabbits			30 mg. in paraffin wax pellet.[3553]	R. tibial metaphysis implant.	Tumors[3554]		At least 12 mos.
Rigdon, R. H., 1957	Turkeys			0.25% soln. in acetone for varying periods of time.	Skin, under wing	0[3555]		
Rigdon, R. H., et al., 1957	2 ducks	White pekin		0.25% in acetone daily for 30 d	Skin	0[3555]	Sacrificed at 10 mos. & 1 yr.	13 mos.
	3 ducks	White pekin		Crystals as 2–5 mg. compressed pellets.	S.C., intramuscular & intracerebral inoculation.	0[3557]	1 sacrificed at 8 mos. & 2 at 1 yr.	1 yr.
	3 ducks	White pekin		10 mg. crystals susp. in mineral oil, 0.5 ml. daily for 30 d.	Into trachea thru external larynx with small catheter.	0[3558]	1 killed at 75 d., 2 at 34 d.	75 d.
	1 duck	White pekin		0.25% in acetone daily for 45 d	Skin	0[3556]	Sacrificed at 1 yr. & 45 d.	1 yr. & 45 d.
Rogers, S., 1957[a]	Mice	Swiss		0.2 cc. of 2% in olive oil, 2–5 d. prior given 0.1% orotic acid in tap water as drinking water for duration.	I.M	Tumors[3559]	23	10 wks.
	Mice	A		0.2 cc. of 2% in olive oil, 2–5 d. prior given 0.1% orotic acid in tap water as drinking water for duration.	I.M	Tumors[3560]	25	9 wks.

[3545] At 4 mos.
[3547] 1 ovarian granulosa cell tumor, 13 with mammary tumors.
[3548] 1 ovarian granulosa cell tumor; 14 with mammary tumors.
[3549] 9 forestomach papillomas, 8 pulmonary adenomas, 1 lymphoblastoma, 2 leukemias, 1 reticulum cell sarcoma.
[3550] 14 fibrosarcomas; tumor immunity studies followed.
[3551] Dermal.
[3552] Histological study of dermis.
[3553] Osteogenic sarcomas.
[3554] Repetitive diagnostic radiography.
[3555] Treatment area lymphoid nodules.
[3556] Hepatic cirrhosis.
[3557] 1 hepatic cirrhosis.
[3558] 1 tracheal membrane necrosis.
[3559] Pulmonary adenomas or adenocarcinomas; 22/mouse.
[3560] Pulmonary adenomas or adenocarcinomas; 7/mouse.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE (Continued)								
	Mice	A		0.2 cc. of 2% in olive oil, 2–5 d. prior given 0.1% orotic acid in tap water as drinking water for duration.	I.M.	Tumors[3561]	18	8 wks.
	Mice	C		0.2 cc. of 2% in olive oil, 2–5 d. prior given 0.1% orotic acid in tap water as drinking water for duration.	I.M.	Tumors[3562]	25	8 wks.
	Mice	A		0.2 cc. of 2% in olive oil	I.M.	Tumors[3563]	17 at 8 wks	8 wks.
	Mice	C		0.2 cc. of 2% in olive oil	I.M.	Tumors[3564]	25 at 8 wks	8 wks.
	Mice	Swiss	M & F	0.2 cc. of 2% in olive oil	I.M.	Tumors[3565]	23 at 10 wks	10 wks.
	Mice	A	M & F	0.2 cc. of 2% in olive oil	I.M.	Tumors[3566]	26 at 9 wks	9 wks.
Rudali, G., et al., 1957	34 mice (2 mos. old).	AKR	M	1 mg. in 0.2 ml. peanut oil	P.O. once wkly. for 6 wks.	Tumors[3567]	32 at 90 d	90 d.
Scarpelli, D. G., and von Haam, E., 1957.	20 mice	C3H	F	String impregnated with crystals	Endocervical canal insert.	Tumors[3568]		At least 33 wks.
Shubik, P., and Della Porta, G., 1957.	12 mice	Swiss	M	Approx. 0.08 ml. of 2% soln. in purified benzene, 6 d./wk. up to 19 wks.	Skin	10[3569]	1 died at 2 & 5 wks.	Life.
	14 mice	Swiss	M	Approx. 0.08 ml. of 2% soln. in purified benzene, twice daily, 6 d./wk. for 8 wks.	Skin	13[3570]		15 wks.
	5 mice	Swiss	M	2.5 mg. in 0.5 ml. olive oil	I.P.	0	100% at 5 mos	5 mos.
Standish, S. M., 1957	Rats[3571]	Albino Sprague-Dawley.	M	1 mm. long pellet containing 20% mixture by wt. in carbowaxes.	L. submaxillary salivary gland implant.	Tumors[3572]	Sacrificed at 1, 2, 4, 8, 12, 16, 20 & 24 wks.	24 wks.
Zeppa, R., and Womack, N. A., 1957.	12 mice	C3H	M	0.03–0.05 ml. of 0.5% soln. in mineral oil.	Inj. into gall-bladder.	0	Good survival	1 yr.
Abbott, C. E. B., et al., 1958	120 rats	Wistar	M	8 to 11 mg. pellet implant	I.M.	Tumors[3573]	Sacrificed on appearance of tumor.	360 d.
Brenner, R., 1958	12 mice (4–6 mos. old).	Black (GNS)		0.03% MC in isopropyl alcohol, 4 times wkly., total 350 μg. MC.	Skin	Tumors[3574]		30–35 wks.
	11 mice (4–6 mos. old).	Brown		0.03% MC inisopropyl alcohol, 4 times wkly., total 350 μg. MC.	Skin	Tumors[3575]		30–35 wks.

[3561] Pulmonary adenomas or adenocarcinomas; 4/mouse.
[3562] Pulmonary adenomas or adenocarcinomas; 3/mouse.
[3563] Pulmonary adenomas or adenocarcinomas; avg. 7/mouse.
[3564] Pulmonary adenomas or adenocarcinomas; avg. 2/mouse.
[3565] Pulmonary adenomas or adenocarcinomas; avg. 35/mouse.
[3566] Pulmonary adenomas or adenocarcinomas; avg. 13/mouse.
[3567] 7 leukemias, 24 pulmonary adenomas.
[3568] 14 cervical, 3 cervico-vaginal squamous cell carcinomas, (10 invasive, 7 non-invasive).
[3569] 149 tumors: squamous cell carcinomas and papillomas. Avg. latent period 6 wks.
[3570] 214 tumors: squamous cell carcinomas and papillomas. Avg. latent period 5½ wks.
[3571] Weanling and adult.
[3572] 4 fibrosarcomas, 9 epidermoid carcinomas.
[3573] 100 (83.3%) with sarcomas; (rhabodomyosarcomas, fibrosarcomas and leiomyosarcomas). 73 at 270 days.
[3574] 100% with tumors (avg. 5.8/mouse). Avg. latent period 23 wks.
[3575] 67% with dermal tumors, (avg. 1.5/mouse). Avg. latent period 27.5 wks.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE (Continued)								
	17 mice (4–6 mos. old).	Black (GNC)		0.03% MC in isopropyl alcohol, 4 times wkly., total of 350 μg. MC.	Skin	Tumors[3575]		30–35 wks.
	28 black mice	F2		0.03% MC in isopropyl alcohol 4 times wkly., total 350 μg.	Skin	Tumors[3577]		30–35 wks.
	9 brown mice	F2		0.03% MC in isopropyl alcohol 4 times wkly., total 350 μg.	Skin	Tumors[3578]		30–35 wks.
	10 brown mice.	F2		0.03% MC in isopropyl alcohol 4 times wkly., total 350 μg.	Skin	Tumors[3579]		30–35 wks.
	15 mice (4–6 mos. old).	White (GNC)		0.03% MC in isopropyl alcohol, 4 times wkly., total 350 μg.	Skin	Tumors[3580]		
	13 mice (4–6 mos. old).	Yellow		0.03% MC in isopropyl alcohol 4 times wkly., total 350 μg.	Skin	Tumors[3581]		30–35 wks.
	27 mice (4–6 mos. old).	White (GN)		MCA 0.03% in isopropyl alcohol 4 times wkly. painting, total 350 μg.	Skin	Tumors[3582]		30–35 wks.
	43 mice (4–6 mos. old).	Spotted		0.03% MC in isopropyl alcohol, 4 times wkly., total 500 μg.	Skin	Tumors[3583]		30–35 wks.
	17 "wild fartig" mice.	F2		0.03% MC in isopropyl alcohol 4 times wkly., total 350 μg.	Skin	Tumors[3584]		30–35 wks.
	13 "wild fartig" mice.	F1 of White & Brown.		0.03% MC in isopropyl alcohol, 4 times wkly., total 350 μg.	Skin	Tumors[3585]		30–35 wks.
	19 "wild fartig" mice.	F2		0.03% MC in isopropylic alcohol, 4 times wkly., total 350 μg.	Skin	Tumors[3585]		30–35 wks.
	10 black mice	F2		0.03% MC in isopropyl alcohol 4 times wkly., total 350 μg.	Skin	Tumors[3587]		30–35 wks.
	10 white mice	F2		0.03% MC in isopropyl alcohol, 4 times wkly., total 350 μg.	Skin	Tumors[3588]		30–35 wks.
	11 mice	White & black		0.03% MC in isopropyl alcohol, 4 times wkly., total 350 μg.	Skin	Tumors[3587]		30–35 wks.
	15 mice	F of brown & black.		0.03% MC in isopropyl alcohol 4 times wkly., total 350 μg.	Skin	Tumors[3589]		30–35 wks.
	9 white mice	F2		0.03% MC in isopropyl alcohol, 4 times wkly. total 350 μg.	Skin	Tumors[3577]		30–35 wks.
	10 mice	Brown		0.03% MC in isopropyl alcohol 4 times wkly., total 350 μg.	Skin	Tumors[3590]		30–35 wks.

[3575] 75% with dermal tumors, (avg. 2.8/mouse). Avg. latent period 23.0 wks.
[3577] 50.0% with dermal tumors.
[3578] 81.0% with dermal tumors.
[3579] 68.0% with dermal tumors.
[3580] 93.3% with dermal tumors.
[3581] 100% with dermal tumors, (avg. 3.5/mouse). Avg. latent period 21.6 wks.
[3582] 98% with dermal tumors, (avg. 3.4/mouse). Avg. latent period 22.8 wks.
[3583] Applied to pigmented and non-pigmented areas; no difference in response. (Pigmented: 1.86/mouse at 21.1 wks.; non-pigmented: 1.85/mouse at 21.5 wks.).
[3584] 80% with dermal tumors.
[3585] 66.8% with dermal tumors.
[3585] 91.5% with dermal tumors.
[3587] 100% with dermal tumors.
[3588] 77.0% with dermal tumors.
[3589] 53.1% with dermal tumors.
[3590] 33.3% with dermal tumors.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE (Continued)								
	10 mice	Black (GNC)		0.03% MC in isopropyl alcohol, 4 times wkly., total 350 μg.	Skin	Tumors[3591]		30–35 wks.
Hardin, C. A., et al., 1958	Mice	DBA/1		0.1 mg. of 0.6% soln. in benzene daily for 9 wks.	Skin	Tumors[3692]	4 at 9 wks	9 wks.
Hasson, J., 1958	24 mice	A	12 ♂♂	0.6% soln. in benzene, freshly prepared thrice wkly. up to 31 wks.[3592a]	Skin, l. side of abdomen.	Tumors[3693]		Up to 31 wks.
	24 mice	A	12 ♂♂	0.6% soln. in benzene, freshly prepared, thrice wkly. up to 31 wks.[3694,3695]	Skin, l. side of abdomen.	Tumors[3596]		Up to 36 wks.
	24 mice	A	12 ♂♂	0.6% soln. in benzene, freshly prepared, thrice wkly. up to 31 wks.[3697]	Skin, l. side of abdomen.	Tumors[3598]		Up to 36 wks.
Hine, C. H., et al., 1958	30 mice	Heston A	M	0.6% in propylene glycol in 3 inj., every other d.	I.P	Tumors[3699]	22 at 16 wks	16 wks.
	30 mice	C3H	M	0.2 ml. of 0.3% soln. in acetone once wkly.	Skin	Tumors[3600]	Survivors sacrificed at 6 mos.	6 mos.
	16 rabbits	Albino	M	0.5 ml. of 0.3% soln. in acetone once wkly.	Skin	Tumors[3601]	13 at 24 mos	24 mos.
	30 mice	Heston A	M	0.6% propylene glycol in 3 injs., every other d.	S.C. scapular region.	Tumors[3602]	24 at 16 wks	16 wks.
	30 mice	Heston A	M	0.6% in propylene glycol once a wk. for 3 injs.	I.P	Tumors[3603]	18 at 16 wks	16 wks.
	Mice	Heston A	M	0.03 g./kg. unspecified amt., then on normal diet.	I.P	Tumors[3604,3605]	23 at 16 wks	16 wks.
Horava, A., and von Haam, E., 1958.	42 rats	Wistar CFW	M	17 cm. string impregnated with approx. 350 mg. inserted twice, at 0 & 14 wks.	Appendicostomy into cecoappendix.	Tumors[3606,3607]	All sacrificed at 48 wks.	48 wks.
Horava, A., and von Haam, E., 1958.	20 rats	Wistar CFW	M	17 cm. string impregnated with approx. 350 mg. for 14 wks.	Appendicostomy into cecoappendix.	Tumors[3607,3608]	All sacrificed at 14 wks.	14 wks.
Kawamoto, S., et al., 1958	Mice	DBA/2	M	0.25% soln. in benzene thrice wkly. for 18 applications.	Skin, different sites.	Tumors[3609,3610,3611]		About 200 d.

[3691] 70.0% with dermal tumors.
[3692] Papillomas at 36 days, squamous cell carcinoma at 9 wks. Transplanted to normal DBA/1 mice.
[3692a] Dermal enervation.
[3693] 24 with epidermoid carcinoma; 2 sarcomas at 20.4 wks. (avg.).
[3694] 4 received no treatment between 16–24 wks.
[3696] Sham surgery.
[3696] 17 with epidermoid carcinomas (1 sarcoma); 2 with sarcomas at 26.4 wks. (avg.).
[3697] Only 2 received complete treatment (31 wks.).
[3598] 20 with epidermoid carcinomas (6 sarcomas).
[3599] 20/22 with multiple pulmonary adenomas at 16 wks.
[3600] 16 squamous cell carcinomas, 3 S.C. fibrosarcomas, 1 papilloma. Acetone treated controls negative.
[3601] 12 papilloma-squamous cell carcinomas, 2 squamous cell carcinoma. Acetone treated controls negative.
[3602] 24 with multiple pulmonary adenomas.
[3603] 18 with multiple pulmonary adenomas.
[3604] 20/23 with multiple pulmonary adenomas.
[3605] 15/29 controls with pulmonary adenomas (4 multiple).
[3606] 7 cecal intra-epithelial carcinomas. 19 cecal invasive carcinomas.
[3607] Untreated string insert controls negative.
[3608] 2 cecal intra-epithelial carcinomas.
[3609] 11/32 (34%) with leukemia.
[3610] 14/212 (6.6%) untreated controls with leukemia.
[3611] Leukemia Study only.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE (Continued)								
	Mice	DBA/2	M	0.25% soln. in benzene thrice wkly. for 9 applications.	Skin, different sites.	Tumors[3610, 3611, 3612]		About 250 d.
Kocke, H. U., 1958	100 mice	Own strain	M & F	1% in Agar, 0.1 ml. of susp. = 1 mg. MC.	S.C. implant	Tumors[3613]	Animals killed at intervals.	120 d.
	100 mice 3 mos. old.	Inbred	M & F	1% in Agar, 1 mg. MC (0.1 ml. sol.)	S.C	Tumors[3614]		120 d.
	100 mice	Own inbred strain.	M & F	1 mg. (1% in agar)	S.C	Tumors[3615, 3616, 3617]	10 mice were killed at 7, 14, 21, 28 d; 20 at 88 d., 15 at 105 d., 25 at 120 d.	120 d.
Marchant, J., 1958	13 mice	1 F	F	0.20 ml. of 0.5% soln. in olive oil applied in 16 drops, 4 on each dorsal & ventral surface at fortnightly intervals 8 times.[3618]	Skin	Tumors[3619]	Avg. 6.2 mos	At least 9 mos.
	7 mice[3620]	1 F	F	0.20 ml. of 0.5% soln. in olive oil applied in 16 drops, 4 on each dorsal & ventral surface at fortnightly intervals 8 times.[3621]	Skin	Tumors[3622]	Avg. 5.3 mos	At least 6 mos.
	9 mice[3623]	1 F	F	0.20 ml. of 0.5% soln. in olive oil applied in 16 drops, 4 on each dorsal & ventral surface at fortnightly intervals 8 times.	Skin	Tumors[3624]	Avg. 4.5 mos	At least 5.8 mos.
	9 mice[3625]	1 F	F	0.20 ml. of 0.5% soln. in olive oil applied in 16 drops, 4 on each dorsal & ventral surface at fortnightly intervals 8 times.[3626]	Skin	Tumors[3627]	Avg. 5.2 mos	At least 6½ mos.
	4 mice[3625]	1 F	F	0.20 ml. of 0.5% soln. in olive oil applied in 16 drops, 5 on each dorsal & ventral surface at fortnightly intervals 8 times.[3626]	Skin	Tumors[3628]	Avg. 5.4 mos	At least 6 mos.
	Mice[3629]	1 F	F	Several drops of 0.5% soln. in olive oil at fortnightly intervals 8 times.[3626]	Intransasal	0	Avg. 10.5 mos	At least 10½ mos.
	19 mice	Virgin 1F	F	0.5% in olive oil, 0.2 ml. (1 mg.) as 16 drops every 2 wks. for 8 applications.	Skin, ventral & dorsal.	Tumors[3630]	10.0 mos. avg	

[3610] 14/212 (6.6%) untreated controls with leukemia.
[3611] Leukemia Study only.
[3612] 5/32 (15.7% with leukemia).
[3613] 14% pulmonary tumors; implant site sarcomas and mammary tumors.
[3614] Pulmonary adenomas; implant site sarcomas and mammary tumors.
[3615] 14% with pulmonary tumors. 10% untreated controls with pulmonary tumors.
[3616] Implant site sarcomas, mammary tumors, precancerous dermal lesions.
[3617] Hyperplasia of pulmonary vessel walls.
[3618] Treated after breeding and lactation ended.
[3619] 9 with mammary tumors, (6 multiple).
[3620] Natural breeders.
[3621] Treated before first lactation.
[3622] 2 mammary tumors.
[3623] Pseudocyesis.
[3624] 9 with mammary tumors, (5 multiple).
[3625] Forced breeders.
[3626] Treated after birth of first litter.
[3627] 6 with mammary tumors, (3 multiple).
[3628] 3 mammary tumors.
[3629] Breeders.
[3630] 14 with mammary tumors; 1 ovarian lesion (possible neoplasia).

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE (Continued)								
	25 mice[3631]	IF	F	0.5% soln. in olive oil given fortnightly 8 times.	Skin	Tumors[3632]	Avg. 7.1 mos	At least 12.3 mos.
	27 mice[3633]	IF	M	0.5% soln. in olive oil given fortnightly 8 times.	Skin	Tumors[3634]	Avg. 7.0 mos	At least 11 mos.
Markello, R., 1958	59 mice[3635]	4-prunt Sublines of NHO.	M	1 mg. dissolved in 0.1 cc. sesame oil	S.C. r. flank	Tumors[3636]	Avg. 55 d	At least 434 d.
	82 mice[3636]	4-prunt Sublines of NHO.	F	1 mg. dissolved in 0.1 cc. sesame oil	S.C. r. flank	Tumors[3637]	Avg. 75 d	At least 323 d.
	258 mice[3638]	Prunt Sublines of NHO.	M	1 mg. dissolved in 0.1 cc. sesame oil	S.C. r. flank	Tumors[3639]	Avg. 55 d	At least 460 d.
	377 mice[3638]	Prunt Sublines of NHO.	F	1 mg. dissolved in 0.1 cc. sesame oil	S.C. r. flank	Tumors[3640]	Avg. 75 d	At least 345 d.
	282 mice[3641]	2-prunt Sublines of NHO.	F	1 mg. dissolved in 0.1 cc. sesame oil	S.C. r. flank	Tumors[3642]	Avg. 75 d	
	184 mice[3643]	5-prunt Sublines of NHO.	M	1 mg. dissolved in 0.1 cc. sesame oil	S.C. r. flank	Tumors[3644]	55 d	At least 486 d.
	293 mice[3643]	5-prunt Sublines of NHO.	F	1 mg. dissolved in 0.1 cc. sesame oil	S.C. r. flank	Tumors[3646]	Avg. 75 d.	At least 275 d.
Miller, E. C., et al., 1958	12 rats	Albino	6 āā	0.0036% of diet for 16 wks	P.O	0	100%	32 wks.
Nau, C. A., et al., 1958	20 mice	CFW-10 & C3H-10.	M	1 mg./5 g. feed in water-base mixture for 64 wks., total 0.344 g.	P.O	Tumors[3646]		64 wks.
	60 mice	C3H	30 āā	1 mg./5 g. feed in water-base mixture for 52 & 61 wks., total 0.261 & 0.344 g.	P.O	Tumors[3647]	52 wks.-F & 61 wks.-M.	52 wks. & 61 wks.
	40 mice	C3H	M	1 mg./5 g. feed in oil-basc mixture for 55 wks., total 0.245 g.	P.O	Tumors[3648]		55 wks.

[3631] Simultaneous ovariectomy and S.C. ovarian graft from IF female. 11 from litter mates.

[3632] 19 with mammary tumors, (6 multiple).

[3633] Simultaneous castration and S.C. ovarian graft from IF female. None from litter mates.

[3634] 19 with mammary tumors (6 multiple).

[3635] From 5th, 6th or subsequent litters of 7th generation methylcholanthrene-treated mice.

[3636] 49 fibrosarcomas at 214 days avg.; 3 mammary carcinomas at 226 days avg.; 1 squamous cell carcinoma at 434 days avg.; 7 pulmonary tumors at 369 days avg.

[3637] 57 fibrosarcomas at 123 days avg.; 6 mammary carcinomas at 102 days avg.; 11 squamous cell carcinomas at 104 days avg.; 13 mixed tumors, at 146 days avg.; 13 pulmonary tumors at 214 days avg.; 2 unspecified at 102 days avg.

[3638] From 1st or 2nd litter of 13 generation methylcholanthrene-treated mice.

[3639] 227 fibrosarcomas at 185 days avg.; 1 mammary carcinoma at 142 days avg.; 5 squamous cell carcinoma at 238 days avg.; 2 mixed tumors at 132 days avg.; 31 pulmonary tumors at 460 days avg.; 5 unspecified (gastric or renal) at 301 days avg.

[3640] 260 fibrosarcomas at 150 days avg.; 59 mammary carcinomas at 195 days avg.; 42 squamous cell carcinomas at 122 days avg.; 39 mixed tumors at 156 days avg.; 59 pulmonary tumors at 225 days avg.; 8 hepatic tumors at 183 days avg.; 4 unspecified tumors (gastric or renal) at 345 days avg.

[3641] From 1st or 2nd litter of 16 generation of methylcholanthrene-treated mice.

[3642] 51.0% fibrosarcomas at 144 days avg.; 25.8% mammary carcinoma at 162 days avg.; 7.0% squamous cell carcinoma at 158 days avg.; 4.7% mixed tumors at 131 days avg.; 9.0% pulmonary tumors at 235 days avg.; 2.5% hepatic and other tumors at 155 days avg.

[3643] From 5th, 6th and subsequent litters of 16 generation methylcholanthrene-treated mice.

[3644] 157 fibrosarcomas at 175 days avg.; 1 mammary carcinoma at 146 days avg.; 3 squamous cell carcinoma at 92 days avg.; 30 pulmonary tumors at 486 days avg.; 2 unspecified (gastric or renal) at 400 days avg.

[3645] 173 fibrosarcomas at 138 days avg.; 99 mammary carcinoma at 148 days avg.; 42 squamous cell carcinoma, at 121 days avg.; 22 mixed tumors at 138 days avg.; 28 pulmonary tumors, at 200 days avg.; 3 unspecified (gastric or renal) at 275 days avg.

[3646] 3 with gastrointestinal adenocarcinoma. 10 with forestomach squamous cell carcinoma.

[3647] 9 with forestomach squamous cell carcinoma. 9 with squamous metaplasia and hyperplasia.

[3648] 10 with forestomach squamous cell carcinoma. 2 with mesenteric fibrosarcoma.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE (Continued)								
	30 mice	C3H	F	1 mg./5 g. feed in oil-base mixture for 52 wks., total 0.195 g.	P.O	Tumors[3649]		52 wks.
	Rabbit	White		Total dose of 255.9 mg. in water susp. thrice wkly. for 254 applications in 21 mos.	Skin, abdomen	0	Killed at 25 mos	25 mos.
	Rabbit	White		Total dose of 248.0 mg. in water susp. thrice wkly. for 250 applications in 21 mos.	Skin, abdomen	0	Killed	21 mos.
Nau, C. A., et al., 1958	20 mice	C3H		Total dose 23.58 mg. in water susp., 0.4 mg.: 1 g. respectively, painted thrice wkly. for 160 applications in 13 mos.	Skin, back	Tumors[3650, 3651, 3652]	6 killed, 14 died	13 mos.
	20 mice	C3H		Total dose of 20.2 mg. in "cooking oil", 1:2 parts respectively thrice wkly. for 149 applications in 12 mos.	Skin, back	Tumors[3651, 3652, 3663]	14 killed, 6 died	12 mos.
	40 mice	C3H	M	1 mg./5 g. feed in oil-base mixture for 53 wks., total 0.241 g.	P.O	Tumors[3654]		53 wks.
	20 mice	CFW & C3H	M	1 mg./5 g. food in pellet as water-base mixture for 64 wks., total 0.344 g.	P.O	Tumors[3655]		64 wks.
	60 mice	C3H	30 āā	1 mg./5 g. food in pellet as water-base mixture for 52 & 61 wks., total 0.344 & 0.261 g.	P.O	Tumors[3656]		At least 61 wks.
	40 mice	C3H	M	1 mg./5 g. in food pellet as oil-base mixture for 55 wks., total 0.245 g.	P.O	Tumors[3657]		55 wks.
	30 mice	C3H	F	1 mg./5 g. food in pellet as oil-base mixture for 52 wks., total 0.195 g.	P.O	Tumors[3658]		52 wks.
	19 mice	10 C3H & 9 CFW.		Total dose of 23.0 g. in mineral oil, 1:2 parts respectively, thrice wkly. for 137 applications in 11 mos.	Skin, back	Tumors[3652, 3669, 3660]	10 killed, 9 died	11 mos.
	20 mice	10 C3H & 10 CFW.		Total dose of 8.96 mg. in 1% benzene soln., thrice wkly. for 83 applications in 6 mos.	Skin, back	Tumors[3652, 3661, 3662]	16 killed, 3 died	6 mos.
	40 mice	C3H	M	1 mg./5 g. food in pellet as oil-base mixture for 53 wks., total 0.241 g.	P.O	Tumors[3663]		53 wks.

[3649] 10 with forestomach squamous cell carcinoma. 9 with squamous cell hyperplasia.
[3650] 5 with dermal squamous cell carcinoma.
[3651] 20 C3H water controls negative.
[3652] 943 untreated CFW and C3H mice developed 6 dermal, 6 hepatic and 1 splenic malignant neoplasms.
[3663] 13 with dermal squamous cell carcinoma.
[3654] 9 with forestomach squamous cell carcinoma. 4 with pancreatic malignant tumors.
[3655] 3 with gastrointestinal adenocarcinoma. 10 with forestomach squamous cell carcinoma.
[3656] 9 with forestomach squamous cell carcinoma. 9 with squamous metaplasia and hyperplasia.
[3657] 10 with forestomach squamous cell carcinoma. 2 with mesenteric fibrosarcoma.
[3658] 10 with forestomach squamous cell carcinoma, 9 with squamous cell hyperplasia.
[3659] 7 with dermal carcinoma, 1 with fibrosarcoma, 1 with malignant lymphoma, 1 with hepatoma.
[3660] 15 C3H and 10 CFW mineral oil controls negative.
[3661] 10 with squamous cell carcinoma, 1 with cutaneous fibrosarcoma.
[3662] 65 benzene controls negative.
[3663] 9 with forestomach squamous cell carcinoma. 4 with pancreatic malignant tumors.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE (Continued)								
	20 mice	10 C3H & 10 CFW.		Total dose of 7.08 mg. in 0.075% benzene soln. thrice wkly. for 86 applications in 7 mos.	Skin, back	Tumors[3652], [3664], [3665].	15 killed, 5 died	7 mos.
O'Neill, Hugh F., and Strong, Leonell C., 1958.	1432 mice	2 Prunt	M & F	1 mg. in 0.1 cc. sesame oil	S.C	Tumors[3666]		At least 265 d.
Ranadive, K. J., and Hakim, S. A., 1958.	27 mice	L (p) albino	F	0.25% soln. in benzene twice wkly. till death.	Skin, various sites.	Tumors[3667], [3668].	Life	8 mos.
	9 mice	L (p) albino	F	(2) 0.1 mg. in 0.6 mg. paraffin wax pellets.	Implant, with 5th pair mammary glands, 1 on either side.	Tumors[3668], [3669].	Age at death 6–10 mos.	
Rigdon, R. H., 1958	22 ducks			10 mg. per ml. in 1% soln. of polysorbate 80.25 ml. dose.	I.T	Tumors[3670]	Killed at various times.	283 d.
Rigdon, R. H., 1958	18 turkeys	17 broad breasted bronzes x Beltsville small whites, 1 Beltsville small white.		0.5, 1.0 or 2.0 cm. of 0.25% soln. in acetone daily, 1–18 times in 25 d., 9–32 times in 100 d., 7–59 times in 130 d., 1–82 times in 250 d.	Skin	Tumors[3671]	Sacrificed 1 at 70 d., 1 at 194 d., 5 at 215 d., & 225 d., 9 between 300 & 350 d., 2 between 420 & 450 d.	450 d.
Sanghvi, L. D., and Strong, L. C., 1958.	927 mice	pBr F_{13}–F_{16}	465 F, 462 M	1 mg. dissolved in 0.1 cc. sesame oil.	S.C. r. flank	Tumors[3672]		At least 900 d.
	580 mice	pBr F_4–F_{12}	283 F, 307 M	1 mg. dissolved in 0.1 cc. sesame oil.	S.C. r. flank	Tumors[3673]		At least 900 d.
	1285 mice	pBr F_{17}–F_{20}	661 F, 624 M	1 mg. dissolved in 0.1 cc. sesame oil.	S.C.r. flank	Tumors[3674]		
Scarpelli, D. G., and Von Haam, E., 1958.	5 mice	C3H	F	Crystal coated nylon thread for 30–45 wks.	Endocervical insert.	Tumors[3675]		Up to 45 wks.
Sherwin-Weidenreich, R., et al., 1958.	40 mice	Swiss	F	0.6% in benzene painted 3 times wkly.[3676] for 3 wks.	Skin	Tumors[3677]		36 wks.
	40 mice	Swiss	F	0.6 % in benzene 3 times wkly. for 3 wks.[3678]	Skin	Tumors[3679]		36 wks.

[3652] 943 untreated CFW and C3H mice developed 6 dermal, 6 hepatic and 1 splenic malignant neoplasms.
[3664] 11 squamous cell carcinomas.
[3665] 55 C3H and 40 CFW benzene controls negative.
[3666] Fibrosarcomas, squamous cell carcinomas, mammary carcinomas and hepatic tumors.
[3667] 4/6 breeders with mammary tumors (10 adenocarcinomas, 1 polygonal cell carcinoma, 6 adenoacanthomas); 6/11 forced breeders with mammary tumors (6 adenocarcinomas, 1 intratubular carcinoma, 3 adenoacanthomas, 1 carcinoma simplex). 2/2 mated, non-conceived females with mammary tumors (1 adenocarcinoma, 1 adenoacanthoma, 1 carcinoma simplex).
[3668] 39 virgins, 28 breeders, negative for spontaneous mammary tumors.
[3669] 5/9 forced breeders with mammary tumors (4 adenocarcinomas, 1 adenoacanthoma, 2 carcinosarcomas); 2 with S.C. fibrosarcoma.
[3670] 15 with respiratory tract (abdominal sac) neoplasms. Details reported elsewhere.
[3671] 8 with treatment area tumors (5 hemangiomas, 2 papillomas, 1 lymphoma).
[3672] 192 females, 182 males with injection site tumors. 147 females, 179 males with other-site tumors.
[3673] 179 females, 200 males with injection site tumors. 48 females, 65 males with other-site tumors.
[3674] 415 females, 237 males with injection site tumors. 132 females, 255 males with other-site tumors.
[3675] 5 with cervical epidermoid carcinoma.
[3676] Daily (5/wk. for 3 wks.) S.C. cortisone injections (.5 mg) begun at 4th wk.
[3677] 3 with dermal tumors.
[3678] Daily (5/wk. for 3 wks.) S.C. cortisone injections (0.25 ml.) begun at 4th wk.
[3679] 9 with dermal tumors.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE (Continued)								
	40 mice	Swiss	F	0.6% in benzene, 3 times wkly. for 3 wks.[3680]	Skin	Tumors[3681]		36 wks.
	40 mice	Swiss	F	0.6% in benzene 3 times wkly. for 3 wks.[3682]	Skin	Tumors[3683]		36 wks.
	40 mice	Swiss	F	0.6% in benzene 3 times wkly. for 3 wks.[3684]	Skin	Tumors[3686]		36 wks.
	40 mice	Swiss	F	0.6% in benzene 3 times wkly. for 3 wks.[3686]	Skin	Tumors[3687]		36 wks.
Shigeta, Y., 1958	Rats	Wistar		1.5 mg. emulsion dissolved in polyethylene glycol given as drinking water.	P.O	Tumors[3688]	1 killed at 152 d	At least 152 d.
Simpson, W. L., and Prychodko, W., 1958.	Mice	Tumblebrook Farm Swiss.		Unspecified amt. in anhydrous lanolin-applied 40 times in 13 wks. to belly, then unspecified amt. in benzene applied 5 times to back.	Skin	10[3689]	34	At least 13 mos.
	Mice	Tumblebrook Farm Swiss.		Unspecified amt. in benzene applied to back 5 times.	Skin	1[3690]		
Stewart, H. L., et al., 1958	109 mice	C57BL	102 M, 7 F	0.3 mg. in aqueous methyl cellulose susp. once.	Intramural inj. into submucosa of glandular stomach.	Tumors[3691]	1 to several killed hrly., daily, bi-wkly. or wkly., 1 dead on 34th d. discarded.	175 d.
von Haam, E., et al., 1958	24 rats	Harlan		2 mg. susp. in 1 ml. of olive oil	S.C	Tumors[3692]		At least 8 mos.
Bain, G. O., et al., 1959	60 guinea pigs			Unspecified amt. as pellet for over 500 d.	Gall bladder implant.	0[3693]		Over 500 d.
	25 hamsters	Golden	M	6–8 mg. pellet for 140, 180 or 240 d	Gall bladder implant.	Tumors[3694]	19 at 1 mo., 2 killed at 140 d., 8 at 180 d., 9 at 240 d.	240 d.
	25 hamsters	Golden	M	6–8 mg. pellet for 60–240 d[3695]	Gall bladder implant.	Tumors[3696]	20 at 1 mo., 1 killed at 60 d., 6 at 140 d., 2 at 160 d., 11 at 240 d.	240 d.

[3680] Daily (5/wk. for 3 wks.) S.C. cortisone vehicle injections (0.25 ml.) begun at 3rd wk.
[3681] 6 with tumors.
[3682] Daily (5/wk. for 3 wks.) S.C. cortisone injections (0.5 mg.) begun at 3rd wk.
[3683] 14 with tumors.
[3684] Daily (5/wk. for 3 wks.) S.C. saline injections begun at 3rd wk.
[3685] 10 with tumors.
[3686] Daily (5/wk. for 3 wks.) S.C. saline injections begun at 4th wk.
[3687] 6 with dermal tumors.
[3688] 1 with 4 colonic adenocarcinomas at 152 days.
[3689] Dermal and mammary carcinomas.
[3690] Mammary carcinoma.
[3691] 22 gastric adenocarcinoma at 42 days. 1 adenocarcinoma-sarcoma at 120 days. 1 adenoacanthoma-sarcoma at 126 days. 1 gastric sarcoma at 105 days. Gastric lesions in non-tumor bearers classified as precancerous.
[3692] 54% undifferentiated spindle cell sarcomas at 4–8 mos.
[3693] Cholecystitis glandularis proliferans.
[3694] 12 biliary carcinomas, 1 sarcoma.
[3695] Concurrent with implant, and 60 days later, animals received 1/4 of 25 mg. estradiol S.C. pellet implant.
[3696] 12 biliary carcinomas (1 with renal and adrenal metastasis). 4 sarcomas (3 in animals with biliary carcinoma). 2 mammary carcinomas with metastases.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE (Continued)								
Batra, B. Kumari, 1959	26 mice[66]	C57BL	F	Single brush stroke of 2.5% soln. in thiophene free benzene once.	Ovaries	0[3697]		Studied thru 4th generation.
	175 mice[66]	Strong A	F	Single brush stroke of 2.5% soln. in thiophene free benzene once.	Ovaries	Tumors[3698, 3699].		Studied thru 4th generation.
	28 mice[66]	C3H (Bar)	F	Single brush stroke of 2.5% soln. in thiophene free benzene once.	Ovaries	Tumors[3700, 3701].		Studied thru 4th generation.
	66 mice[66]	C3H (Jax)	F	Single brush stroke of 2.5% soln. in thiophene free benzene once.		Tumors[3702, 3703].		Studied thru 4th generation.
	71 mice[66]	C58 (Black)	F	Single brush stroke of 2.5% soln. in thiophene free benzene once.	Ovaries	Tumors[3704, 3705].		Studied thru 4th generation.
Biancifiori, C., et al., 1959	36 mice[196]	BALB/c	F	0.5% soln. (5 mg.) in 1 ml. almond oil at fortnightly intervals, 6 applications in 12 wks.	8 drops on dorsal & ventral surfaces of skin.	Tumors[3706]	35 at 32 wks	At least 50 wks.
	41 mice[3707]	BALB/c	F	0.5% soln. (5 mg.) in 1 ml. almond oil at fortnightly intervals, 6 applications in 12 wks.	8 drops on dorsal & ventral surfaces of skin.	Tumors[3708]	33 at 32 wks	At least 40 wks.
	32 mice[3709]	BALB/c	F	0.5% soln. (5 mg.) in 1 ml. almond oil at fortnightly intervals, 6 applications in 12 wks.	8 drops on dorsal & ventral surfaces of skin.	Tumors[3710]	4 at 32 wks	At least 32 wks.
Bielschowksy, F., and Bielschowsky, M., 1959.	12 mice	Dwarf x NZY & NZC.	6 F, 6 M	0.5 mg. in 0.1 ml. of 0.5% soln. in olive oil once.	S.C	0[3711]		275 d.
	5 mice	Dwarf		0.5 mg	S.C	Tumors[3712]	1 killed at 300 & 325 d.	325 d.
Bock, F. G., and King, D. W., 1959.	Mice[3713]	C57BL		0.5 mg. in 0.1 ml. heavy mineral oil 16 times at 3 to 7 d. intervals.	P.O., stomach tube.	Tumors[3714]	6 "effective" total	8–10 mos.
	Mice[3713]	C57BL		0.5 mg. in 0.1 ml. heavy mineral oil 8 times at 3 to 7 d. intervals.	P.O., stomach tube.	Tumors[3715]	15 "effective" total.	8–10 mos.

[66] Age at start: 3 mos.
[196] Virgin.
[3697] 25 untreated controls negative.
[3698] 61 with tumors, (1 mammary, 60 pulmonary).
[3699] 5/60 untreated controls with pulmonary tumors.
[3700] 20 with tumors (mammary and pulmonary).
[3701] 10/28 untreated controls with mammary tumors.
[3702] 49 with tumors (mammary and pulmonary).
[3703] 29/39 untreated controls with mammary tumors.
[3704] 15 with tumors (some with leukemia).
[3705] 5/39 untreated controls with tumors (some with leukemia).
[3706] Dermal squamous papillomas and carcinomas, pulmonary adenomas.
[3707] Olfactory lobectomy at 6 wks., treated 6 wks. later.
[3708] 1 mammary tumor at 36 wks. Dermal squamous papillomas and carcinomas, pulmonary adenomas.
[3709] Mated with vasectomized males; pseudocyesis.
[3710] 14 with mammary tumors (11 adenocarcinomas, 1 polygonal cell tumor, 2 papillary cystic tumors). Dermal squamous papillomas and carcinomas, pulmonary adenomas.
[3711] 1 epithelioma and 10 sarcomas at 59–275 days.
[3712] 3 injection site sarcomas at 105 days.
[3713] Starved 24 hrs. before treatment.
[3714] 100% with forestomach papillomas; 2 with forestomach carcinomas. 6 "effective" total mineral oil controls negative.
[3715] 100% with forestomach papillomas, 1 with forestomach carcinoma. 16 "effective" total mineral oil controls negative.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE (Continued)								
	Mice[3713]	C57BL		0.5 mg. in 0.1 ml. heavy mineral oil once.	P.O., stomach tube.	Tumors[3716]	14 "effective" total.	8–10 mos.
Dao, T. L., and Sunderland, H., 1959.	9 rats	Sprague-Dawley.	F	10 mg./ml. dissolved in sesame oil, 6 d./wk. for 60 d.	P.O., stomach tube.	Tumors[3717]		92 d.
	10 rats	Sprague-Dawley.	F	10 mg./ml. dissolved in sesame oil, daily for 20 d.	P.O	Tumors[3718]		120 d.
	10 rats	Sprague-Dawley.	F	10 mg./ml. dissolved in sesame oil, daily for 10 d.	P.O	0		120 d.
	26 rats[3719]	Sprague-Dawley.	F	10 mg./ml. dissolved in sesame oil, 6 d./wk. for 20 d.	P.O., stomach tube.	Tumors[3720]		50 d.
	20 rats	Sprague-Dawley.	F	10 mg./ml. dissolved in sesame oil, 6 d./wk. for 20 d.	P.O., stomach tube.	Tumors[3721]		97 d.
	6 rats	Sprague-Dawley.	F	10 mg./ml. dissolved in sesame oil, 6 d./wk. for 10 d.	P.O., stomach tube.	0		3 mos.
	6 rats[198]	Sprague-Dawley.	F	10 mg./ml. dissolved in sesame oil, 6 d./wk. for 60 d.	P.O., stomach tube.	Tumors[3722]		6 mos.
	13 rats	Sprague-Dawley.	F	10 mg./ml. dissolved in sesame oil, 6 d./wk. for 20 d.	P.O., stomach tube.	Tumors[3723]		6 mos.
	7 rats[198]	Sprague-Dawley.	F	10 mg./ml. dissolved in sesame oil, 6 d./wk. for 20 d.	P.O., stomach tube.	Tumors[3724]		6 mos.
	6 rats	Sprague-Dawley.	F	10 mg./ml. dissolved in sesame oil, 6 d./wk. for 60 d.	P.O., stomach tube.	Tumors[3725]		6 mos.
	10 rats	Sprague-Dawley.	F	10 mg./ml. dissolved in sesame oil, 6 d./wk. for 6 d.	P.O., stomach tube.	Tumors[3726]		3 mos.
	Rats[3727]	Sprague-Dawley.	M	10 mg./ml. dissolved in sesame oil, 6 d./wk. for 20 d.	P.O., stomach tube.	0		5 mos.
	Rats[3727]	Sprague-Dawley.	M	10 mg./ml. dissolved in sesame oil, 6 d./wk. for 35 & 50 d.	P.O., stomach tube.	Tumors[3728]		5 mos.
	30 rats[3729]	Sprague-Dawley.	M	10 mg./ml. dissolved in sesame oil, 6 d./wk. for 15 d.	P.O., stomach tube.	0	15 at 15 d	5 mos.
	10 rats	Sprague-Dawley.	F	10 mg./ml. dissolved in sesame oil, 6 d./wk. for 60 d.	P.O., stomach tube.	Tumors[3730]		6 mos.
	4 rats	Sprague-Dawley.	F	10 mg./ml. dissolved in sesame oil, 6 d./wk. for 12 d.	P.O., stomach tube.	0		3 mos.

[198] Castrated.
[3713] 3 injection site sarcomas at 105 days.
[3716] 8 with forestomach papillomas. 12 "effective" total mineral oil controls negative.
[3717] 9 with mammary carcinomas at 50–92 days.
[3718] 100% with mammary carcinoma.
[3719] Pregnant.
[3720] 23 with mammary carcinomas at 35–50 days.
[3721] 9 with mammary carcinomas at 58–97 days.
[3722] 4 with mammary carcinoma at 58–90 days.
[3723] 12 with mammary carcinoma at 41–120 days.
[3724] 3 with mammary carcinoma at 50–68 days.
[3725] 6 with mammary carcinomas at 47–75 days.
[3726] 2 with mammary carcinoma at 65 and 75 days.
[3727] Intact and castrated.
[3728] 1 intact animal at each dose level with mammary carcinoma.
[3729] Hypophysectomized.
[3730] 10 with mammary carcinoma at 49–98 days.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE (Continued)								
	13 rats[3731]	Sprague-Dawley.	F	10 mg./ml. dissolved in sesame oil, 6 d./wk. for 20 d.	P.O., stomach tube.	Tumors[3732]		70 d.
Dao, T. L., and Sunderland, H., 1959.	10 rats	Sprague-Dawley.	F	10 mg./ml. dissolved in sesame oil, 6 d./wk. for 15 d.	P.O., stomach tube.	Tumors[3733]		3 mos.
	20 rats	Sprague-Dawley.	F	10 mg./ml. dissolved in sesame oil, 6 d./wk. for 20 d.	P.O., stomach tube.	Tumors[3734]		5 mos.
	10 rats	Sprague-Dawley.	F	10 mg./ml. dissolved in sesame oil, 6 d./wk. for 60 d.	P.O., stomach tube.	Tumors[3735]		5 mos.
	8 rats[3719]	Sprague-Dawley.	F	10 mg./ml. dissolved in sesame oil, 6 d./wk. for 6 d.	P.O., stomach tube.	Tumors[3736]		3 mos.
	9 rats	Sprague-Dawley.	F	10 mg./ml. dissolved in sesame oil, 6 d./wk. for 15 d.	P.O., stomach tube.	Tumors[3737]		3 mos.
	5 rats	Sprague-Dawley.	F	10 mg./ml. dissolved in sesame oil, 6 d./wk. for 20 d.	P.O., stomach tube.	Tumors[3738]		5 mos.
	19 rats[3719]	Sprague-Dawley.	F	10 mg./ml. dissolved in sesame oil, 6 d./wk. for 6 d.	P.O., stomach tube.	Tumors[3739]		150 d.
	10 rats[3719]	Sprague-Dawley.	F	10 mg./ml. dissolved in sesame oil, 6 d./wk. for 6 d.	P.O., stomach tube.	0		3 mos.
	12 rats[3729]	Sprague-Dawley	F	10 mg./ml. dissolved in sesame oil, 6 d./wk. for 15 d.	P.O., stomach tube.	0		6 mos.
	8 rats[198]	Sprague-Dawley.	F	10 mg./ml. dissolved in sesame oil, 6 d./wk. for 60 d.	P.O., stomach tube.	Tumors[3740]		6 mos.
	10 rats	Sprague-Dawley.	F	10 mg./ml. dissolved in sesame oil. 6 d./wk. for 60 d.	P.O., stomach tube.	Tumors[3741]		6 mos.
	4 rats	Sprague-Dawley.	F	10 mg./ml. dissolved in sesame oil, 6 d./wk. for 12 d.	P.O., stomach tube.	0		3 mos.
Dao, T. L., et al., 1959	Rats	Sprague-Dawley.	F	10 mg. daily for 60 d	Intragastric instillation.	Tumors[3742, 3743].		At least 65 d.
DiPaolo, J. A., and Moore, G. E., 1959.	Mice[3744]	DBA/2	M & F	0.2% soln. in acetone bi-wkly. at various sites for 25 wks.	Skin	Tumors[3745]	26 at 36 wks	35 wks.
	Mice[3746]	DBA/2	M & F	0.2% soln. in acetone bi-wkly. at various sites for 25 wks.	Skin	Tumors[3747]	32 at 36 wks	36 wks.

[198] Castrated.
[3719] Pregnant.
[3729] Hypophysectomized.
[3731] Pseudocyesis.
[3732] 12 with mammary carcinoma at 49–70 days.
[3733] 6 with mammary carcinoma at 52–65 days.
[3734] 100% with mammary carcinoma at 5 mos.
[3735] 10 with mammary carcinoma at 47–78 days.
[3736] 4 with mammary carcinoma at 34–49 days.
[3737] 9 with mammary carcinoma at 35–50 days.
[3738] 4 with mammary carcinoma at 38–44 days.
[3739] 4 with mammary carcinoma at 123 days avg.
[3740] 3 with mammary carcinoma at 75–135 days.
[3741] 10 with mammary carcinoma at 49–98 days.
[3742] 50% with mammary adenocarcinomas at 60–65 days.
[3743] Controls negative.
[3744] Exposed to 70% oxygen.
[3745] 26 with 115 papillomas, 39 carcinomas.
[3746] Exposed to 10% oxygen.
[3747] 32 with 112 papillomas, 29 carcinomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE (Continued)								
	40 mice[3748]	Swiss	M & F	0.02 ml. of 0.15% soln. in acetone twice wkly. for 20 wks.	Skin	Tumors[3749, 3750].	38 at 1st tumor appearance.	At least 93 wks.
	36 mice[3751]	Swiss	M & F	0.02 ml. of 0.15% soln. in acetone twice wkly. for 20 wks.	Skin	Tumors[3752, 3753].	35 at 1st tumor appearance.	At least 85 wks.
	Mice[3748]	DBA/2	M & F	0.2% soln. in acetone biwkly. at various sites for 25 wks.	Skin	Tumors[3754]	22 at 36 wks	36 wks.
	31 mice[3745]	Swiss	M & F	0.02 ml. of 0.15% soln. in acetone twice wkly. for 20 wks.	Skin	Tumors[3755, 3766].	100%	At least 86 wks.
	40 mice[3744]	Swiss	M & F	0.02 ml. of 0.15% soln. in acetone twice wkly. for 20 wks.	Skin	Tumors[3749, 3767].	38 at 1st tumor appearance.	At least 80 wks.
Field, J. B., et al., 1959	26 rats	Long-Evans	F	Unspecified amt. once, fed low-iodine diet for over 18 mos.	S.C	Tumors[3758, 3759].		Up to 33 mos.
Fleming, H. S., 1959	137 guinea pigs.		M & F	Few crystals mixed with fetal salivary gland tissue.	Homotransplant to brain.	0[3760]	39 died within 30 d., 18 died from 90–160 d., remainder sacrificed.	176 d.
	47 guinea pigs.			Few crystals mixed with fetal salivary gland tissue.	Homotransplant to eyes.	([3761])		30 d.
Gurskii, T., 1959	36 mice	RIII	M	1 mg. as crystalline powder[3762]	Inj. into pancreas.	Tumors[3763, 3764].	From 2nd mo. animals killed mthly., 19 at 4 mos.	At least 8 mos.
	128 mice	Bn, R 111, A	F	1 mg. as crystalline powder, mixed with India ink.	Inj. into pancreas.	Tumors[3765, 3765].	Animals killed biwkly. & mthly., 57 at 4 mos.	1 yr.
	21 mice	RIII	M	1 mg. as crystalline powder	Inj. into pancreas.	Tumors[3767]	From 2nd mo. animals killed mthly., 16 at 4 mos.	At least 4 mos.
Hardin, C. A., and Werder, A. A., 1959.	30 mice	DBA/1		0.1 mg. of 0.6% soln. in benzene thrice wkly. for 6 wks.	Skin	0		11 mo. 2 wks.
	15 mice	DBA/1		0.1 mg. of 0.6% soln. in benzene thrice wkly. for 12 wks.	Skin	Tumors[3758]		13 mos.

[3744] Exposed to 70% oxygen.
[3746] Exposed to 10% oxygen.
[3748] Exposed to 20% oxygen.
[3749] 38 with dermal tumors and pulmonary adenomas.
[3750] 12 room air controls with 3 pulmonary adenomas.
[3751] Exposed to compressed air.
[3752] 35 with dermal tumors and pulmonary adenomas.
[3753] 12 compressed air controls with 2 pulmonary adenomas.
[3754] 22 with 23 papillomas and 7 carcinomas.
[3766] 100% with dermal tumors and 100% less 2 with pulmonary adenomas.
[3756] Twelve 10% oxygen controls with 1 pulmonary adenoma.
[3757] Fourteen 70% oxygen controls with 7 pulmonary adenomas.
[3758] Sarcomas at 14 mos. avg.
[3759] Thyroid tumor study; 4 nodular thyroids.
[3760] Transplant anaplasia (probable malignancy).
[3761] Transplants resorbed.
[3762] 16 semiweekly I.M. injections of 0.25 mg. cortisone begun 6 wks. later.
[3763] 14 (73.7%) with pancreatic tumors (some squamous cell carcinomas), first at 4 mos.
[3764] 5 cortisone controls negative.
[3765] 29 with sarcomas (22 pancreatic connective tissue, 6 splenic connective tissue, 1 gastric connective tissue) after 4 mos.
[3765] 23 India ink controls negative at 1 yr.
[3767] 10 (66.6%) with pancreatic tumors, first at 4 mos. Those examined were squamous cell carcinomas.
[3768] 7 with leukemia at 1–2 mos.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE (Continued)								
	30 mice	DBA/1		0.1 mg. of 0.6% soln. in benzene thrice wkly. for 6 wks.[3769]	Skin	Tumors[3770]		11 mos. 2 wks.
	30 mice	DBA/1		0.1 mg. of 0.6% soln. in benzene thrice wkly. for 3 wks.	Skin	0		10 mos. 3 wks.
	6 mice	DBA/1		0.1 mg. of 0.6% soln. in benzene thrice wkly. for 9 wks.	Skin	Tumors[3771]		12 mos. 1 wk.
	30 mice	DBA/1		0.1 mg. of 0.6% soln. in benzene thrice wkly. for 3 wks.[3769]	Skin	Tumors[3772]		10 mos. 3 wks.
Hirtzler, R., 1959	19 rats	Albino	M	Silk thred 15 mm. long (kidney) and 2–3 mm. long (adrenal).	Kidney & adrenal implants.	0	All sacrificed at 2, 4 & 6 mos.	6 mos.
	21 mice	C+	M	Silk thread 15 mm. long (kidney) and 2–3 mm. long (adrenal) dipped in molten MCA.	Kidney & adrenal implants.	Tumors[3773]	19 sacrificed at 2, 4 & 6 mos.	6 mos.
	20 hamsters	Golden	M	Silk thread 15 mm. long (kidney) and 2–3 mm. long (adrenal).	Kidney & adrenal implants.	Tumors[3774]	14 sacrificed at 2, 3 & 6 mos.	6 mos.
Huggins, C., et al., 1959	15 rats[3775]	Sprague-Dawley, albino.	F	10 mg. in sesame oil 6 d./wk. for 50 d.[3776]	P.O., stomach tube.	Tumors[3777]		300 d.
	11 rats	Sprague-Dawley, albino.	F	10 mg. in sesame oil 6 d./wk. for 50 d.	P.O., stomach tube.	Tumors[3778]		At least 73 d.
	9 rats	Sprague-Dawley, albino.	F	10 mg. in sesame oil 6 d./wk. for 50 d.[3779]	P.O., stomach tube.	Tumors[3780]		At least 62 d.
	9 rats	Sprague-Dawley, albino.	F	10 mg. in sesame oil 6 d./wk. for 50 d.[3781]	P.O., stomach tube.	Tumors[3782]		At least 55 d.
	9 rats	Sprague-Dawley, albino.	F	10 mg. in sesame oil once wkly	P.O., stomach tube.	Tumors[3783]		10 mos.
	5 rats[3784]	Sprague-Dawley, albino.	F	10 mg. in sesame oil once wkly	P.O., stomach tube.	Tumors[3785]		10 mos.

[3769] 30 subjected to surgical trauma of untreated area: 10 at time of treatment, 10 1 mo. later, 10 2 mos. later.
[3770] 7 with leukemia at 4–7 mos.
[3771] 2 with leukemia at 1–2 mos.
[3772] 3 with leukemia at 4–7 mos.
[3773] 1 sarcoma and 1 renal carcinoma at 6 mos. 1 pulmonary adenoma (presumed spontaneous).
[3774] 1 incision site epidermoid carcinoma at 6 mos.
[3776] Hysterectomy at 42 days.
[3776] Daily (6 days/wk.) S.C. injection of 0.1 units equine gonadotrophin.
[3777] 100% with mammary carcinoma at 72.2±20.8 days. 1 with injection site sarcoma at 168 days.
[3778] 100% with mammary carcinoma at 55.0±8.8 days.
[3779] Daily S.C. injections of 0.08 μg estradiol-17β.
[3780] 100% with mammary carcinoma at 52.9±7.1 days.
[3781] Daily S.C. injection of 0.1 μg estradiol-17β.
[3782] 100% with mammary carcinoma at 46.0±5.4 days.
[3783] 100% with mammary carcinoma at 35–83 days.
[3784] Adrenalectomized at 42 days.
[3785] 100% with mammary carcinoma at 49–81 days.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE (Continued)								
	314 rats	Sprague-Dawley albino.	F	10 mg. in sesame oil 6 d./wk	P.O., stomach tube.	Tumors[3786]		10 mos.
	9 rats	Sprague-Dawley, albino.	F	10 mg. in sesame oil 6 d./wk. for 50 d.[3787]	P.O., stomach tube.	Tumors[3788]		At least 161 d.
	108 rats[3789]	Sprague-Dawley, albino.	F	10 mg. in sesame oil 6 d./wk	P.O., stomach tube.	Tumors[3790]		10 mos.
	9 rats	Sprague-Dawley, albino.	F	10 mg. in sesame oil 6 d./wk. for 50 d.[3791]	P.O., stomach tube.	Tumors[3792]		At least 81 d.
	9 rats	Sprague-Dawley, albino.	F	10 mg. in sesame oil 6 d./wk. for 50 d.[3793]	P.O., stomach tube.	Tumors[3794]		At least 167 d
	15 rats	Sprague-Dawley, albino.	F	10 mg. in sesame oil 6 d./wk. for 50 d.	P.O., stomach tube.	Tumors[3795]		At least 88 d
	10 rats	Sprague-Dawley, albino.	F	10 mg. in sesame oil 6 d./wk. for 50 d.[3796]	P.O., stomach tube.	Tumors[3797]		At least 57 d.
	10 rats	Sprague-Dawley, albino.	F	10 mg. in sesame oil 6 d./wk. for 50 d.[3798]	P.O., stomach tube.	Tumors[3799]		At least 62 d.
	10 rats	Sprague-Dawley, albino.	F	10 mg. in sesame oil 6 d./wk. for 50 d.[3800]	P.O., stomach tube.	Tumors[3801]		At least 49 d.
	13 rats[3802]	Sprague-Dawley, albino.	F	10 mg. in sesame oil once wkly. for 7 wks.	P.O., stomach tube.	0	Over 10 mos	Over 10 mos.
	10 rats	Sprague-Dawley, albino.	F	10 mg. in sesame oil 6 d./wk. for 50 d.	P.O., stomach tube.	Tumors[3803]		300 d.
	15 rats[3775]	Sprague-Dawley, albino.	F	10 mg. in sesame oil 6 d./wk. for 50 d.[3804]	P.O., stomach tube.	Tumors[3805]		300 d.

[3775] Hysterectomy at 42 days.
[3786] 100% with mammary carcinoma at 92 days.
[3787] Daily S.C. injections of 1 μg estradiol-17β and 0.25 mg. 9a-bromo-11-ketoprogesterone.
[3788] 6 with mammary carcinoma at 108.0±44.8 days.
[3789] Ovariectomized at 42 days.
[3790] 74 with mammary carcinoma at 45–271 days.
[3791] Daily S.C. injection of 1 μg estradiol-17β.
[3792] 100% with mammary carcinoma at 59.4±12.7 days.
[3793] Daily S.C. injection of 10 μg estradiol-17β.
[3794] 7 with mammary carcinoma at 125±33.9 days.
[3795] 100% with mammary carcinoma at 55.1±12.2 days.
[3796] Daily S.C. injection of 0.05 mg. of 9a-bromo-11-ketoprogesterone.
[3797] 100% with mammary carcinoma, at 48.7±7.6 days.
[3798] Daily S.C. injection of 0.1 mg. 9a-bromo-11-ketoprogesterone.
[3799] 100% with mammary carcinoma, at 51.3±7.1 days.
[3800] Daily S.C. injection of 0.25 mg. 9a-bromo-11-ketoprogesterone.
[3801] 100% with mammary carcinoma, at 43.2±3.3 days.
[3802] Hypophysectomized at 49 days.
[3803] 100% with mammary carcinoma, at 55.1±9.4 days.
[3804] Daily (6 da./wk.) S.C. injections of 0.4 units equine gonadotrophin.
[3805] 3 with mammary carcinoma 109–273 days. 100% with injection site sarcoma.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE (Continued)								
	10 rats	Sprague-Dawley, albino.	F	10 mg. in sesame oil 6 d./wk. for 50 d.[3806]	P.O., stomach tube.	Tumors[3807]		At least 52 d.
	9 rats	Sprague-Dawley, albino.	F	10 mg. in sesame oil 6 d./wk. for 50 d.[3808]	P.O., stomach tube.	Tumors[3809]		At least 67 d.
	9 rats	Sprague-Dawley, albino.	F	10 mg. in sesame oil 6 d./wk. for 50 d.[3810]	P.O., stomach tube.	Tumors[3811]		At least 109 d.
	9 rats	Sprague-Dawley, albino.	F	10 mg. in sesame oil 6 d./wk. for 50 d.[3812]	P.O., stomach tube.	Tumors[3813]		At least 168 d.
	10 rats	Sprague-Dawley, albino.	F	10 mg. in sesame oil 6 d./wk. for 50 d.[3814]	P.O., stomach tube.	Tumors[3815]	3 at 10 mos.	10 mos.
Klein, M., 1959	Mice[3816]	Related to A/He albino.	F	0.05 ml. of 3% methocelaerosol OT susp. thrice wkly. for 10 times.	P.O., stomach tube.	Tumors[3817, 3818]	29 at time of 1st hepatoma.	393 d.
	Mice[3816]	Related to A/He albino.	M	0.05 ml. of 3% methocelaerosol OT susp. thrice wkly for 10 times.	P.O., stomach tube.	Tumors[3819, 3820]	26 at time of 1st hepatoma.	393 d.
	Mice[3821]	Related to A/He albino.	F	0.05 ml. of 3% methocelaerosol OT susp. thrice wkly. for 10 times.	P.O., stomach tube.	Tumors[3821, 3822]	30 at time of 1st hepatoma.	390 d.
	Mice[3821]	Related to A/He albino.	M	0.05 ml. of 3% methocelaerosol OT susp. thrice wkly. for 10 times.	P.O., stomach tube.	Tumors[3824, 3825]	25 at time of 1st hepatoma.	390 d.
	Mice[3826]	Related to A/He albono.	F	0.05 ml. of 3% methocelaerosol OT susp. thricc wkly. for 10–13 times.	P.O., stomach tube.	Tumors[3827, 3828]	24 at times of 1st hepatoma.	390 d.
	Mice[3826]	Related to A/He albino.	M	0.05 ml. of 3% methocelaerosol OT susp. thrice wkly. for 10–13 times.	P.O., stomach tube.	Tumors[3829, 3830]	19 at time of 1st hepatoma.	390 d.
	Mice	Related to A/He albino.	M & F	As emulsion	P.O., stomach tube.	Tumors[3831, 3832]		About 11 mos.

[3806] Daily S.C. injection of 0.5 mg. 9a-bromo-11-ketoprogesterone.
[3807] 100% with mammary carcinoma, at 41.8±5.6 days.
[3808] Daily S.C. injections of 0.01 μg. estradiol-17β and 0.25 mg. 9 a-bromo-11-ketoprogesterone.
[3809] 100% with mammary carcinoma at 49.3±10.3 days.
[3810] Daily S.C. injections of 0.1 μg. estradiol-17β and 0.25 mg. 9a-bromo-11-ketoprogesterone.
[3811] 100% with mammary carcinoma, at 61.6±18.7 days.
[3812] Daily S.C. injections of 10 μg. estradiol-17β and 0.25 mg. 9a-bromo-11-ketoprogesterone.
[3813] 7 with mammary carcinomas, at 118±39.6 days.
[3814] 50 daily S.C. injections of 3 mg. dihydrotestosterone.
[3815] 7 with mammary carcinomas, at 149±43.9 days.
[3816] Avg. age: 90 days.
[3817] 27 with pulmonary adenomas, 7 with pulmonary papillomas, 1 with forestomach squamous cell carcinoma, 1 dermal papilloma.
[3818] Of 28 suspension female controls, 1 with hepatoma, 9 with pulmonary adenoma.
[3819] 1 hepatoma, 25 with pulmonary adenomas, 12 with pulmonary papillomas, 1 with forestomach squamous cell carcinoma, 1 dermal papilloma.
[3820] 27 suspension male controls with 8 pulmonary adenomas.
[3821] Avg. age: 8 days.
[3822] 7 with hepatomas, 28 with pulmonary adenomas, 11 with pulmonary papillomas, 1 with forestomach squamous cell carcinoma, 3 with dermal papillomas, 1 dermal squamous cell carcinoma, 3 with sebaceous adenoma, (relationship probable).
[3823] Of 27 suspension controls, 1 with hepatoma, 8 with pulmonary adenomas.
[3824] 21 with hepatomas, 25 with pulmonary adenomas, 12 with forestomach papillomas, 3 with dermal papillomas, 1 squamous cell carcinoma.
[3825] Of 35 suspension male controls, 2 with hepatomas, 10 with pulmonary adenomas.
[3826] Avg. age: 14 days.
[3827] 4 with hepatomas, 23 with pulmonary adenomas, 8 with papillomas, 3 with forestomach squamous cell carcinoma, 1 with dermal papilloma.
[3828] 6/23 suspension female controls with pulmonary adenomas.
[3829] 9 with hepatomas, 18 with pulmonary adenomas, 8 with papillomas, 2 with forestomach squamous cell carcinomas, 1 with dermal papilloma.
[3830] Of 21 suspension male controls, 1 with hepatoma, 6 with pulmonary adenoma.
[3831] 30% with multiple hepatomas. Forestomach tumors: 48% in male, 37% in female.
[3832] 2–4% of untreated controls with hepatomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE (Continued)								
Marchant, J., 1959	45 mice[198]	Albino	M	1 cc. of 0.3% soln. (3 mg.) in acetone once wkly. for 12 wks.	Skin, r. half of dorsum.	Tumors[3833]	43 at 18 wks., avg. 28 wks.	At least 38 wks.
	45 mice	Albino	F	1 cc. of 0.3% soln. (3 mg.) in acetone once wkly. for 12 wks.	Skin, r. half of dorsum.	Tumors[3834]	44 at 11 wks., avg. 27 wks.	At least 36 wks.
	45 mice[3835]	Albino	F	1 cc. of 0.3% soln. (3 mg.) in acetone once wkly. for 12 wks.	Skin, r. half of dorsum.	Tumors[3836]	100% at 11 wks., avg. 28 wks.	----
	45 mice	Albino	M	1 cc. of 0.3% soln. (3 mg.) in acetone once wkly. for 12 wks.	Skin, r. half of dorsum.	Tumors[3837]	41 at 11 wks., avg. 28 wks.	At least 36 wks.
Menkin, V., 1959	12 rabbits	----	F	1 & 0.5% in acetone 3 times a wk. at 2 d. intervals for 11–156 doses, some given blood serum diffusate.	Skin, nipples	0	----	1 still alive after 2 yrs.
	26 rabbits	----	F	1 & 0.5% in acetone 3 times a wk. at 2 d. intervals for 6–100 doses, some given diffusate of breast tissue.	Skin, nipples	Tumors[3838]	----	1 still alive after 2 yrs.
Oda, N., et al., 1959	Mice	DBA/2	----	18 paintings over period of 6 wks	Skin	Tumors[3839]	----	At least 11 mos.
Patz, A., et al., 1959	12 mice	A, A/jax, CF_1	----	Applied as dry crystals, lids then sutured shut.	Cornea epithelium abraded, applied to abraded area.	Tumors[3840, 3841]	----	----
	Mice	C3H	M & F	Suture saturated with 1 part of 10% or 25% MCA: 3 parts cholesterol, some repeated $5\frac{1}{4}$ or $5\frac{1}{2}$ mos. later.	Anterior or posterior eye chamber or vitreous implant.	Tumors[3841, 3842, 3843]	----	At least 10–12 mos.
	Mice	A, A/jax, CF_1	----	As dry crystals or molten	Inj. into posterior chamber of eye.	Tumors[3841, 3844]	----	----
	Mice	A, A/jax, CF_1	----	As dry crystals or molten	Inj. into anterior chamber of eye.	Tumors[3841, 3845]	----	----
Petroff, N., et al., 1959	24 Rhesus monkey.	----	----	30 mg	In the tibia	Tumors[3846]	----	3 yrs. & 6 mos.

[198] Castrated.

[3833] Papillomas at 8 wks. (some regressed). 84% with multiple papillomas at 17 wks. Avg. latent period 15.45 wks. Squamous cell carcinomas at 16 wks.; 70% at 38 wks. Avg. latent period 25.2 wks.

[3834] Papillomas at 6 wks. (some regressed). 98% with multiple papillomas at 17 wks.; avg. latent period 12.33 wks. Squamous cell carcinomas at 14 wks., 80% at 32 wks. Avg. latent period 22.8 wks.

[3835] Ovariectomized.

[3836] Papillomas at 10 wks. (some regressed). 91% with multiple papillomas at 17 wks.; Avg. latent period 15.16 wks. Squamous cell carcinoma at 10 wks.; 80% at 35 wks. Avg. latent period 24.9 wks. 3 mammary tumors.

[3837] Papillomas at 6 wks. (some regressed). 95% with multiple papillomas at 17 wks.; Avg. latent period 12.95 wks. Squamous cell carcinoma at 13 wks.; 80% at 35 wks. Avg. latent period 24.3 wks. 1 mammary tumor.

[3838] 12 nipple lesions (probable neoplasia).

[3839] 69% with leukemia at 13 mos.

[3840] 1 "A" male with corneal squamous cell carcinoma.

[3841] Sham injected controls negative.

[3842] 1 squamous cell carcinoma transplant take.

[3843] 3 with conjunctival squamous cell carcinoma. 2 with harderian gland adenocarcinoma. 3 with choroidal malignant melanoma.

[3844] 1 harderian gland "A" mouse with adenocarcinoma. 1 CF with iridal malignant tumor, 1 A/jax with orbital sarcoma.

[3845] 2 "A" mice with squamous cell carcinoma. 1 "A" mouse with conjunctival squamous cell carcinoma. 1 A/jax with iridal malignant tumor.

[3846] Osteogenic sarcoma.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE (Continued)								
Reagan, J. W., and Wentz, W. B., 1959.	50 mice	C3H	F	String 3 mm. long impregnated with 1 part MCA: 3 parts beeswax.	Susp. in cervical canal.	Tumors[3847]	10 killed at 1, 2, 3, 4 & 5 wks.	5 wks.
Rigdon, R. H., 1959	15 ducks	White Pekin	M	3 or 10 mg. crystals daily for 30 d	Intratracheal	0[3848]	3 killed at 48 d. 1 killed at 90 d. 11 killed at 363–369 d.	369 d.
	97 ducks	White Pekin		7.5–30 mg. in 1 ml. liq. petrolatum 0.5 ml. dose 2–26 injs.	Intratracheal	Tumors[3849]	Killed at various times.	266 d.
	Chickens[3850]	Rhode Is. Reds		0.2 or 1 ml. of 0.25% soln. in acetone daily up to 30 d.	Skin, beneath wing.	Tumors[3851]		Over 128 d.
Ritchie, A. C., 1959	360 rats			Impregnated thread implanted at three mthly. intervals.	Glandular mucosa of stomach.	Tumors[3852]		
Schlumberger, H. G., and Zack, G., 1959.	18 parakeets	Melopsittacus undulatus.	M & F	0.5 mg. as crystalline mixed with 1 mg. diatomaceous earth.	Inj. into s.c. tissue of breast.	Tumors[3853]	10 died within 40 wks. 6 killed within 459 d.	459 d.
	18 parakeets	Melopsittacus undulatus.		0.5 mg. crystalline mixed kieselguhr	I.M. inj	Tumors	1 died after 366 d., 1 sacrificed after 370 d.	
	53 parakeets	Melopsittacus undulatus.	M & F	0.15 ml. of 3% soln. in sesame oil once.	S.C.—I.M. breast.	0	12 survived over 42 wks., 8 sacrificed at 75 wks.	75 wks.
	16 parakeets	Melopsittacus undulatus.	M & F	0.5 mg. as crystalline material	Implant beneath skin of breast.	0	6 died within 7 mos., 10 sacrificed at 20 mos.	20 mos.
	10 parakeets	Melopsittacus undulatus.	M & F	0.15 ml. of 3% soln. in benzol once	I.M. breast	0	6 died within 24 hrs.	Up to 3 mos.
Setala, K., et al., 1959	Mice	White	M	60 μg. in acetone once.[3854]	Skin	0	100%	Up to 60 d.
	Mice	White		60 μg. in acetone once.[3855]	Skin	0	100%	Up to 60 d.
	Mice	White	M	60 μg. in acetone once	Skin	0	100%	Up to 30 d.
	Mice	White	M	60 μg. in acetone once.[3856]	Skin	0	100%	Up to 60 d.
	Mice	White	M	60 μg. in acetone once.[3857]	Skin	0	100%	Up to 60 d.
	Mice	White	M	60 μg. in acetone once.[3858]	Skin	0	100%	Up to 60 d.

[3847] 3 uterine squamous cell carcinoma at 5 wks. 25 beeswax controls negative at 15 wks.
[3848] 3 with squamous metaplasia. cell papilloma.
[3849] 1 tracheal squamous cell papilloma. Others with squamous metaplasia.
[3850] Age: 1–1+ days.
[3851] Squamous cell tumors (probably keratoacanthomas) at 23–128 days (Spontaneous regression). Max. of 8/animal.
[3852] 6–8% with gastric adenocarcinoma. Fibrosarcomas and osteogenic sarcomas present.
[3853] 3 with injection site rhabdomyosarcomas at death (366–371 days). 1 with hepatic, femoral, cardiac and testicular metastases, 42 serial transplants performed.
[3854] 6 applications/wk. of 0.18 mole concentrate polyoxyethylene sorbitan monolaurate (synthesized Tween 20) begun 30 days later, continued for duration.
[3855] 6 applications/wk. of 0.18 mole concentrate sorbitan monostearate (synthesized Span 60) begun 30 days later, continued for duration.
[3856] 12 applications/wk. of 0.18 mole concentrate sorbitan monostearate (synthesized Span 60) begun 30 days later, continued for duration.
[3857] 12 applications/wk. of 0.18 mole concentrate polyoxyethylene sorbitan monostearate (technical or synthesized Tween 60) begun 30 days later, continued for duration.
[3858] 6 applications/wk. of 0.18 mole concentrate polyoxyethylene sorbitan monostearate (technical or synthesized Tween 60) begun 30 days later, continued for duration.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE (Continued)								
	Mice	White	M	0.06 μg. in acetone 6 d./wk. for duration of experiment.	Skin	0	100%	Up to 30 d.
	Mice	White	M	60 μg. in acetone 6 d./wk. for duration of experiment.	Skin	0	100%	Up to 30 d.
Setala, K., et al., 1959	Mice	White	M	60 μg. in acetone once.[3859]	Skin	0	100%	Up to 60 d.
Squartini, F., 1959	Rats	Wistar	M & F	2 mg. in olive oil, daily, 6 times wkly., for 60 d. to life span.	P.O., stomach tube.	Mammary tumors[3860].		At least 6 mos.
Stern, J. A., et al., 1959	26 mice[3861]	Swiss white	F	0.6% soln. in benzene every d., total 5 applications.[3862]	Skin	Tumors[3863]		300 d.
	25 mice	Swiss white	F	0.6% in benzene every other d. total of 5 applications.	Skin	Tumors[3864]		300 d.
	25 mice[3865]	Swiss white	F	0.6% soln. in benzene every other d., total 5 applications.[3862]	Skin	Tumors[3866]		300 d.
Werder, A. A., et al., 1959	30 mice	DBA/1		0.1 mg. of 0.6% soln. in benzene thrice wkly. for 3 wks.[3867]	Skin	Tumors[3868]		10 mos. 3 wks.
	20 mice	DBA/1		0.1 mg. of 0.6% soln. in benzene thrice wkly. for 12 wks.	Skin	Tumors[3869]		13 mos.
	20 mice	DBA/1		0.1 mg. of 0.6% soln. in benzene thrice wkly. for 9 wks.	Skin	Tumors[3869]		12 mos. 1 wk.
	30 mice	DBA/1		0.1 mg. of 0.6% soln. in benzene thrice wkly. for 6 wks.	Skin	Tumors[3870]		11 mos. 2 wks.
	30 mice	DBA/1		0.1 mg. of 0.6% soln. in benzene thrice wkly. for 3 wks.	Skin	Tumors[3871]		10 mos. 3 wks.
	30 mice	DBA/1		0.1 mg. of 0.6% soln. in benzene thrice wkly. for 6 wks.[3872]	Skin	Tumors[3873]		11 mos. 2 wks.
Wong, T., et al., 1959	27 mice	C57BL	M	0.6 mg. daily in basal diet for 10 wks., then fed untreated basal diet 8 wks., purina chow ad. lib. for remainder of experiment.	P.O.	Tumors[3874, 3875].	3 at 50 wks., 17 at 20 wks.	51 wks.
Zackheim, H. S., et al., 1959	12 mice	C-albino	M	0.1 cc. of 0.3% soln. in acetone thrice wkly.	Skin	Tumors[3876]		240 d.

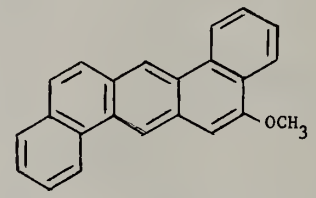
[3859] 12 applications/wk. of 0.18 mole concentrate polyoxyethylene sorbitan monolaurate (synthesized Tween 20) begun 30 days later, continued for duration.
[3860] Study of tumor site distribution.
[3861] 75 days (5 hrs./day) of forced activity begun 15 days before treatment.
[3862] Applied during resting phase of hair cycle.
[3863] 25–30% with papillomas at 300 days.
[3864] 20% with papillomas.
[3865] 75 days (5 hrs./day) of forced activity begun with treatment.
[3866] 60% with papillomas at 300 days.
[3867] 1 subjected to surgical trauma of untreated area at time of treatment; four, 1 mo. later.
[3868] 5 with squamous cell carcinoma at 6–9 mos.
[3869] 20 with squamous cell carcinoma at 2–3 mos.
[3870] 3 with squamous cell carcinoma at 3 mos.
[3871] 1 squamous cell carcinoma at 5 mos.
[3872] 21 subjected to surgical trauma of untreated area; 7 at treatment; seven, 1 mo. later; seven, 2 mos. later.
[3873] 21 with squamous cell carcinoma at 6–9 mos.
[3874] 12 with pulmonary tumors (some multiple), first at 18 wks. 4 with forestomach squamous papilloma, first at 19 wks. 1 with forestomach squamous carcinoma. 3 with leukemia at 22, 23, 51 wks. 3 dermal squamous cell carcinoma at 22, 23, 31 wks. 1 benign sebacious tumor at 51 wks.
[3875] 1/23 untreated controls with leukemia.
[3876] 100% squamous cell carcinoma at 120 days. Study of early dermal changes.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE (Continued)								
	12 rats[3877]	Albino Fisher	M	0.2–0.3 cc. of 0.3% soln. in acetone thrice wkly.	Skin	Tumors[3878]	1 sacrificed every 30 d. up to 330 d.	330 d.
Capurro, P., et al., 1960	12 rats	Sprague-Dawley.	9 M, 3 F	10% susp. in paraffin pellet	Bladder insert	0[3879]	7 at 21 wks	40+ wks.
	16 rats	Sprague-Dawley.	8 M, 8 F	10% susp. in paraffin pellet, fed Via. A deficient diet.	Bladder insert	0[3880]	10 at 8 wks	Up to 20 wks.
Elwi, H. M., and El-Katib, H., 1960.	15 rats	Albino	M	5 mg. & 15 mg	Intratesticular	0		285 d.
	6 rats	Albino	M	3 mg. in sesame oil	Intratesticular	0		140 d.
	5 rats	Albino	M	5 mg	S.C	Tumors[3881]		285 d.
Fels, I. Gordon, and Greco, J., 1960.	Mice	C3H	M	0.6% in benzene thrice wkly. for 90 d.	Skin	Tumors[3882]	Killed at intervals	Up to 160 d.
Hayashi, Yuzo, 1960	10 mice	dd	M	0.02 ml. of 0.6% soln. in benzene 6 times in 17 d.	Skin	0	6 at 30 d., killed	30 d.
	30 mice	dd	M	0.02 ml. of 0.6% soln. in benzene 30 times in 10 wks.	Skin	Tumors[3883]	14 at 150 d., killed.	150 d.
Kallen, B., and Rohl, L., 1960.	9 rats[3884]	R strain albino	M	Approx. 10–20 mg. of 0.25 g. in 4 g. cholesterol-glycerin.	Ventral prostatic implant.	Tumors[3885]	3 died during yr., 6 killed at 12 mos.	12 mos.
Mody, J. K., 1960	37 mice	IF	F	1 ml. (8 drops per side) of 0.5% soln. in arachis oil for (4) fortnightly applications.	Skin, dorsal & ventral surfaces.	0	16 killed up to 15 wks., 21 killed between 16–51 wks.	51 wks.
Perese, D. M., and Moore, G. E., 1960.	321 mice	C3H		Unspecified amt. of powder	Intracerebral insert.	Tumors[3886]	178 after 35 d	Up to 750 d.
	256 mice	105 C3H, 151 Bagg albino.	M	1–2 mm. size pellet of crystallized MC.	Intracerebral insert.	Tumors[3887, 3888]	42 C3H, 132 Bagg	Up to 597 d.
	83 mice	C57BL	F	1–2 mm. size MCA-agar pellet	Implant in various parts of brain.	Tumors[3889]	48	Up to 413 d.
	154 mice	127 C3H, 27 C57BL.	127 M, 27 F	0.1 mg. powder in 0.1 cc. sesame oil as homogeneous susp.	Intracerebral insert.	Tumors[3890, 3891]	67	Up to 318 d.

[3877] Age: 5 mos.
[3878] Of animals treated 180+ days: 1 squamous cell epithelioma, 5 basal cell epitheliomas.
[3879] 2 with urinary cystic hyperplasia and epidermoid cysts.
[3880] 100% with hyperplasia and epidermoid cysts at 3 wks. 3 with mucosal carcinomatous lesions.
[3881] 3 injection site spindle cell sarcomas.
[3882] Papillomas at 2 wks., epidermal carcinomas at 2–3 mos. Biochemical study.
[3883] 5 squamous cell carcinomas, 6 papillomas, 1 pseudo-epitheliomatous hyperplasia.
[3884] Age: 9–12 mos.
[3885] One 12 mo. survivor with possible anaplastic prostatic adenocarcinoma.
[3886] 55 with intracerebral tumors: 33 gliomas, 20 sarcomas, 2 carcinomas. Prevalent extracranial tumors; due to contamination.
[3887] C3H: 14 gliomas, 1 mixed glioma, 1 glioma-sarcoma, 10 sarcomas, 1 carcinoma.
[3888] Bagg: 12 gliomas, 1 glioma-sarcoma, 15 sarcomas. (4 originated intracerebrally).
[3889] 21 with gliomas, 3 with intracerebral sarcomas, 1 with extracerebral sarcoma.
[3890] 9 gliomas (3 mixed), 15 sarcomas, 1 carcinoma. Prevalent mesodermal tumors due to contamination.
[3891] 59 sesame oil controls negative.

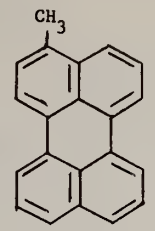
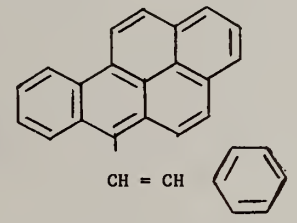
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
530. 20-METHYLCHOLANTHRENE (Continued)								
Della Porta, G., et al., 1960	40 mice	Swiss albino	20 āā	50 μg. in acetone once.[3892]	Skin	Tumors[3893]	8 F & 2 M at 60 wks.	60 wks.
	22 mice	Swiss albino	F	50 μg. in 50 μl. acetone once	Skin	Tumors[3894]	18 at 50 wks. & 6 at 90 wks.	90 wks.
Reyniers, J. A., and Sacksteder, M. R., 1960.	15 quails[3895]	Coturnix		0.1 ml. of MCA in benzene (1.9%)	I.M. breast	Tumors[3896, 3897]	9 at 100 d	100 d.
Reyniers, J. A., and Sacksteder, M. R., 1960.	16 quails[3898]	Coturnix		0.05 ml. of MCA in benzene	I.M. breast	Tumors[3899, 3900]	10 at 75 d	75 d.
	4 quails[3898]	Coturnix		0.03 ml. of MCA in benzene	I.M. breast	Tumors[3900, 3901]	100%	75 d.
Shay, H., et al., 1960	18 rats	Wistar	F	2 mg. in 0.5 cc. olive oil daily, 6 times a wk. avg. treatment period 158 d. before development of 1st tumor.	P.O	Tumors[3902]	Throughout experiment.	At least 158 d.
	91 rats	Wistar	F	Unspecified amt. daily for 4 mos	Intragastric instillation.	Tumors[3903]		12 mos.
Shubik, P., et al., 1960	10 hamsters	Syrian golden	5 āā	6 drops of 0.01% soln. in acetone twice wkly. for 40 wks.	Skin	Tumors[3904]	100% at 50 wks., 1 F at 70 wks., 4 M at 70 wks.	70 wks.
	30 hamsters	Syrian golden	15 āā	0.8% soln. in mineral oil once wkly. for 3 wks., interval of 30 wks., given again for 5 wks.	Skin	Tumors[3905]	9 F, 12 M at 50 wks., 5 M at 85 wks.	101 wks.

531. 3-METHOXY-1,2,5,6-DIBENZANTHRACENE

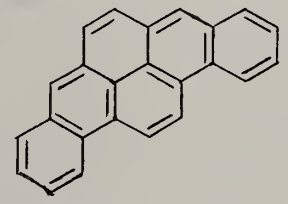


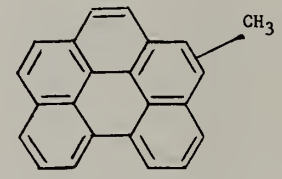
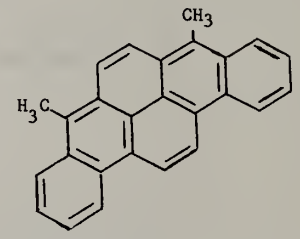
Schoental, R., and Head, M. A., 1955.	24 mice	Mixed	12 āā	0.5 mg. dissolved in 0.1 ml. tricaprylin.[3906]	S.C	0[3907]		Over 22 mos.

[3892] Daily (5–6/wk. for 50 wks.) applications of 60 mg. Tween 60 begun 1 wk. later.
[3893] 11 females with 30 dermal tumors (25 regressed). 1 basal cell carcinoma. 14 males with 32 dermal tumors (30 regressed).
[3894] 1 with otic squamous cell carcinoma and treated area acanthoma.
[3895] Age: 13 days.
[3896] 55% with fibrosarcomas at 49.8 days avg.
[3897] 24 untreated control quail, (age: 12–14 mos.), negative.
[3898] Age: 7–15 days.
[3899] 60% fibrosarcomas at average 40.8 days.
[3900] 24 untreated control quail (age: 12–14 mos.) negative.
[3901] 75% fibrosarcomas at avg. 40.5 days.
[3902] 1952 series: 16/18 (89%) with 37 mammary tumors (36 adenocarcinomas; 1 spindle cell sarcoma). * Recorded in 1952 file.
[3903] 44 (48.1%) with mammary tumors.
[3904] 1 female with melanoma, 100% with melanotic nodules. 17 epidermal tumors in females; 56 in males, at 70 wks. 100% with melanotic nodules.
[3905] Female with rhabdomyosarcoma. Males with 4 keratoacanthotic papillomas, 1 sebaceous adenoma, 1 adrenic cortical adenoma, 2 malignant lymphomas (1 metastatic).
[3906] Pure crystalline.
[3907] 7 with pulmonary adenomata, 2 with hepatoma (comparable to controls).

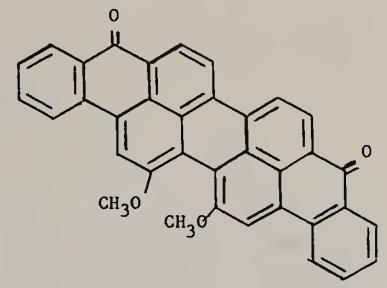
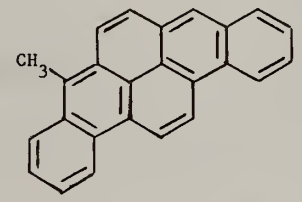
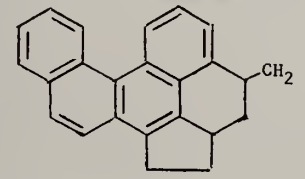
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
532. 3-METHYL-PERYLENE 								
Lacassagne, A., 1957	10 mice	XVII		0.5% in acetone 2 ×wkly	Skin	0	10 at 15 mos	15 mos.
	10 mice	XVII		3×0.6 mg. at 1 mo. interval in olive oil.	S.C	0	5 at 15 mos	
533. 5-STYRYL-3,4-BENZPYRENE 								
Lacassagne, A., et al., 1957	9 mos. old mice, 10.	XVII		5 mg. pellet	S.C	7 sarc		

B. ORGANIC COMPOUNDS—7. HEXACYCLIC AND ABOVE

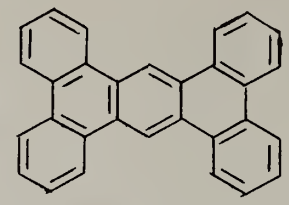
534. 3,4,9,10-DIBENZPYRENE 								
Lacassagne, A., 1957	11 mice	XVII		0.6 mg. in peanut oil, 3 times at mthly. intervals.	S.C.	11 sarc		135 d.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
534. 3,4,9,10-DIBENZPYRENE (Continued)								
Schoental, R., 1959	6 mice	Albino	M	4 mg. in 0.2 ml. of susp. in paraffin oil once.	S.C	Tumors[3908]	4½ mos	4½ mos.
	3 rabbits			Saturated soln. in benzene twice wkly.	Skin	0		6 mos.
	12 mice	Albino	M	Saturated soln. in benzene or dimethylformamide twice wkly. for 3½ mos., then once wkly. as solid crystals for 2 mos.	Skin	Tumors[3909]	Killed at 8 mos	Still in progress.
	3 rabbits			0.1–0.3 ml. of 1% susp. in arachis or or paraffin oil 5 times in 3 mos.	S.C	Tumors[3910]	1 killed at 7 mos	Still in progress.
	6 mice	Albino	M	2 mg. in 0.1 ml. of susp. in paraffin oil once.	S.C	Tumors[3908]	4½ mos	4½ mos.
535. METHYL-1,12-BENZOPERYLENE[3911] 								
Lacassagne, A., 1957	10 mice	XVII		0.6 mg. in olive oil once	S.C	4 sarc. & 1 "pulmonary tumor."		15 mos.
536. 5,8-DIMETHYL-3,4,9,10-DIBENZPYRENE 								
Lacassagne, A., 1957	12 mice	XVII		0.6 mg. in peanut oil, 3 times at mthly. intervals.	S.C	0		135 d.

[3908] 100% with transplantable injection site sarcomas.
[3909] 3 with papillomas at 5.5 mos., progressed to epitheliomata.
[3910] 1 injection site anaplastic carcinoma with anillary nodal metastases.
[3911] Methyl group in position 3 or 4.

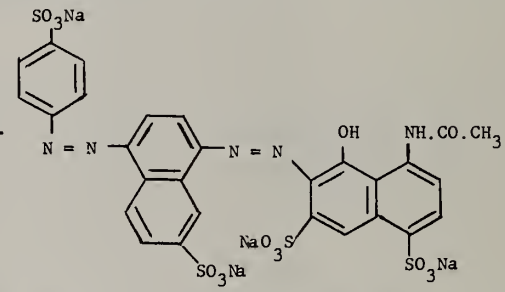
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
537. INDANTHRENE BRILLIANT GREEN B 								
Umeda, M., 1956	12 rats			2 cc. of 2.5 g./10 cc. once a mo	S.C	0	7 at 300 d	At least 300 d.
	13 rats			Once or twice in 2 mos	S.C	0	9 at 250 d	At least 250 d.
538. 5-METHYL-3,4,9,10-DIBENZPYRENE 								
Lacassagne, A., 1957	10 mice	XVII		0.6 mg. in peanut oil, 3 times at mthly. intervals.	S.C	3 sarc		135 d.
539. ang.-STERANTHRENE 								
Dannenberg, H., 1957	19 mice[1019]		10 M, 9 F	0.4% in benzene twice a wk. for 35 wks.	Skin, nape of neck.	Tumors[3912]	18 at 154 d	
	14 mice[1019]		5 M, 9 F	1 mg. in 0.2 ml. sesame oil	S.C	Tumors[3913]	14 at 123 d	
	19 mice	Mixed strain	M & F	0.4% in benzene twice wkly	Skin	Tumors[3914]	18 at time of 1st tumor.	35 wks.
	14 mice	Mixed strain	M & F	1 mg. in 0.2 in sesame oil	S.C	Tumors[3915]	14 at time of 1st tumor.	

[1019] Age: 3–4 months.
[3912] 14 epitheliomas, 2 spindle cell sarcomas.
[3913] 12 spindle cell sarcomas.
[3914] 16 with sarcomas (14 squamous cell, 2 spindle cell) at 208 days avg.
[3915] 12 with spindle cell sarcomas at 154 days avg.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
540. 1,2,3,4,5,6,7,8-TETRABENZANTHRACENE 								
de Clercq, M., et al., 1954	10 mice	XVII		0.3% in acetone or benzene 2 times a wk.	Nape of neck	0		400 d.
	10 mice	XVII		3 times 1 mg. in peanut oil at 1 mo. intervals.	S.C	0		400 d.

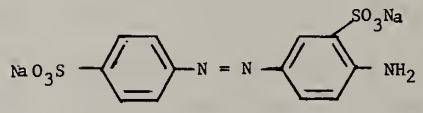
B. ORGANIC COMPOUNDS—8. AZO COMPOUNDS

541. 8-ACETAMIDO-2-[4-(*p*-SULFOPHENYLAZO)-7-SULFO-1-NAPHTHYL-AZO]-1-NAPHTHOL-3,5-DISULFONIC ACID, TETRASODIUM SALT



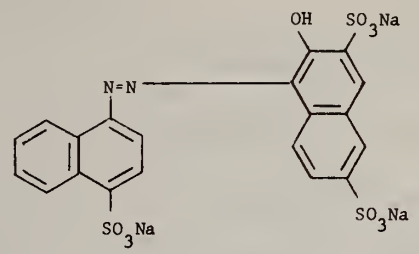
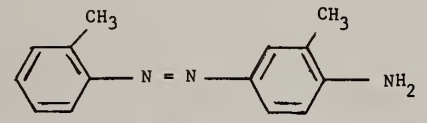
Hecht, G., and Wingler, A., 1952.	10 rats (50–55 g.)		M	0.02–0.1% mixed with the food	P.O	0	9 at 410 d	At least 410 d.

542. ACID YELLOW G



Klinke, unpublished data[3916]	85 rats			10–15 mg. daily as 0.1% in food for duration.	P.O	0		

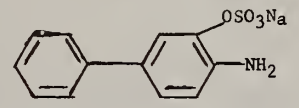
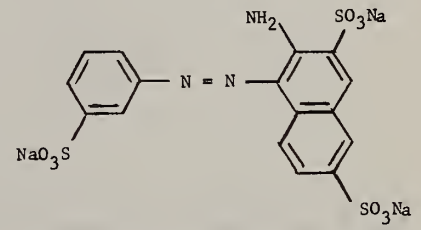
[3916] Recorded in Toxikologische Daten, etc.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
543. AMARANTH[3917] 								
Nelson Arthur A., and Hagan, E., Conway, 1953.	18 rats	Osborne-Mendel.	M & F	2 or 3%, 1 ccm. wkly., for 693 d	S.C	0		693 d.
544. β-AMINOAZOBENZENE								
Terayama, H., and Hanaki, A., 1959.	Rats	Albino		0.06% in rice diet up to 249 d	P.O	0	Killed at intervals	249 d.
545. *o*-AMINOAZOTOLUENE[3939] 								
Arai, K., 1954	Approx. 100 rats.					([3918])		More than 419 d.
Shelton, E., 1954	60 mice	A/HeN	F	0.05% in semi-synthetic diet for 90 d., 30 remained on diet up to 120 d.	P.O	Tumors[3919]	All killed at 120 d	Up to 120 d.
Tagashira, Y., 1954	13 rats	Hybrid	M & F	5% susp. in olive oil in dose of 0.5 cc. for 1 yr.[3920], rice diet. Total of 26 injs.	S.C	0	4 survived 400 d. or more.	600 d.
Crabtree, H. G., 1955	16 rats	Glaxo		0.04% in basic diet for 522–670 d[3921]	P.O	Tumors[3922]	Killed from 522–670 d.	670 d.
Shelton, 1955	22 mice	A-Heston subline.	F	Dissolved in corn oil & added to diet at level of 0.05% for 115 d.	P.O	82% (liver tumors).	100% at 115 d	115 d.
	12 mice	A-Heston subline.	F	Dissolved in corn oil & added to diet at level of 0.05% for 70 d.[3923]	P.O	100% (multiple liver tumors).	100% at 91 d	91 d.

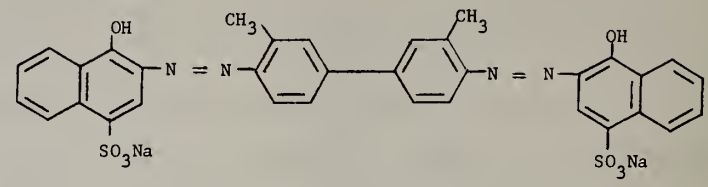
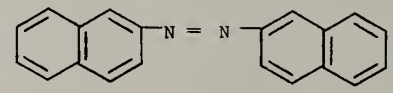
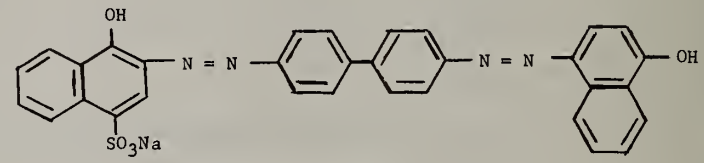
[3917] FD&C Red No. 2.
[3918] 11 adenoma, 7 hepatoma, 5 cholangiocarcinoma, 2 thyroid adenoma.
[3919] Hepatic tumors.
[3920] Daily sterilization (56° C. for 30 min.) for 3 days before injection.
[3921] Untreated diet for 2 two week periods during second year.
[3922] 14 hepatic (12 visible, 2 minute foci).
[3923] Right axilla implant of 2–2.5 mg. pellet diethylstilbestrol in cholesterol (1:9) at beginning.
[3939] 4-O-tolyazo-O-toluidine.

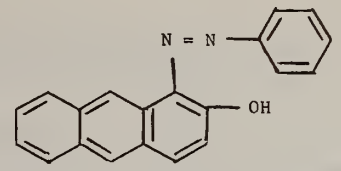
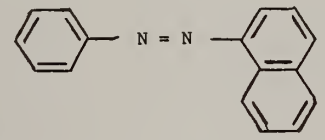
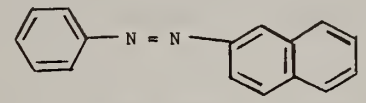
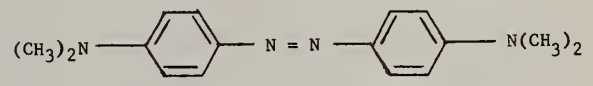
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
545. *o*-AMINOAZOTOLUENE[3939] (Continued)								
	12 mice	A-Heston subline.	F	Dissolved in corn oil & added to diet at level of 0.05% for 57 d.[3923]	P.O.	67% (liver tumors)[3924].	90% at 57 d	57 d.
	24 mice	A-Heston subline.	F	Dissolved in corn oil & added to diet at level of 0.05% for 88 d.	P.O.	29% (liver tumors)[3925].	75% at 115 d	115 d.
	12 mice	A-Heston subline.	F	Dissolved in corn oil & added to diet at level of 0.05% for 120 d.[3923]	P.O.	83% (liver tumors).	100% at 120 d	120 d.
	10 mice	A-Heston subline.	F	Dissolved in corn oil & added to diet at level of 0.05% for 90 d.[3923]	P.O.	80% (liver tumors).	100% at 120 d	120 d.
	11 mice	A-Heston subline.	F	Dissolved in corn oil & added to diet at level of 0.05% for 60 d.[3923]	P.O.	82% (liver tumors)[3926].	63% at 120 d	120 d.
	9 mice	A-Heston subline.	F	Dissolved in corn oil & added to diet at level of 0.05% for 30 d.[3923]	P.O.	44% (liver tumors).	100% at 120 d	120 d.
	19 mice	A-Heston subline.	F	Dissolved in corn oil & added to diet at level of 0.05% for 70 d.[3923,3927]	P.O.	89% (liver tumors)[3928].	83% at 113 d	113 d.
	24 mice	A (hybrid)[3929]	F	Dissolved in corn oil & added to diet at level of 0.05% for 70 d.[3923]	P.O.	78% (liver tumors)[3930].	96% at 112 d	112 d.
Chiuma, E., et al., 1956	Rats	Daikoku		0.1% in food	P.O.	0[3931]		At least 249 d.
Crabtree, 1956	12 rats[1019]	Wistar	M & F	Rat cube diet containing substance at level of 0.06%.	P.O.	0[3932]	10 dead before 300 d.	300 d.
Deringer, M. K., 1956	31 mice	HR (haired)	F	10 mg. in 0.25 cc. of olive oil, mthly. for 10 mos.	S.C., r. axilla	Tumors[3940]	Avg. age at death, 17.9 mos.	At least 20.3 mos.
	25 mice	HR (hairless)	F	10 mg. in 0.25 cc. of olive oil, mthly. for 10 mos.	S.C., r. axilla	Tumors[3941]	Avg. age at death, 19.9 mos.	At least 22.2 mos.
	23 mice	HR (haired)	M	10 mg. in 0.25 cc. of olive oil, mthly. for 10 mos.	S.C., r. axilla	Tumors[3942]	Avg. age at death, 17.3 mos.	At least 19.5 mos.
	22 mice	HR (hairless)	M	10 mg. in 0.25 cc. of olive oil, mthly. for 10 mos.	S.C., r. axilla	Tumors[3943]	Avg. age at death, 16.4 mos.	At least 22 mos.

[1019] Age: 3–4 months.
[3923] Right axilla implant of 2–2.5 mg. pellet diethylstilbestrol in cholesterol (1:9) at beginning.
[3924] Percent of survivors at 57 days.
[3925] Percent of survivors at 115 days.
[3926] Percent of survivors.
[3927] High riboflavin (10 mg./kg.) in treated and untreated diets.
[3928] Percent of survivors at 113 days.
[3929] F_1 (Heston strain A × Lilly strain A).
[3930] Percent of survivors at 112 days.
[3931] Histological study of early changes.
[3932] 10/12 dead before 300 days (insufficient induction time).
[3939] 4-O-tolyazo-O-toluidine.
[3940] 22 (71%) hemangioendotheliomas (6 multiple); 25 (80.6%) hepatomas (18 multiple), 1 dermal papilloma, 2 reticulum cell neoplasms, 1 lymphocytic neoplasm, 3 pulmonary tumors, 5 granulosa cell tumors, 1 Harderian gland tumor.
[3941] 19 (76%) hemangioendotheliomas (8 multiple), 24 (96%) hepatomas (16 multiple), 4 dermal papillomas, 2 dermal squamous cell carcinomas, 4 reticulum cell neoplasms, 5 pulmonary tumors.
[3942] 15 (62.5%) hemangioendotheliomas (9 multiple); 9 (39.1%) hepatomas, (4 multiple); 1 dermal papilloma, 2 S.C. fibrosarcomas, 2 reticulum cell neoplasms, 1 lymphocytic neoplasm, 3 pulmonary tumors.
[3943] 12 (54.5%) hemangioendotheliomas (2 multiple); 7 (31.8%) hepatomas, 4 dermal papillomas, 2 dermal squamous cell carcinomas, 1 S.C. fibrosarcoma, 1 pulmonary tumor, 1 lipoma (questionable).

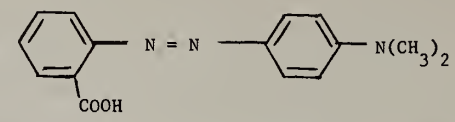
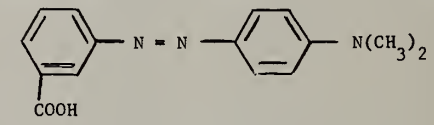
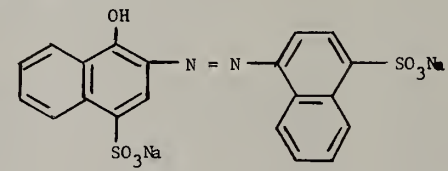
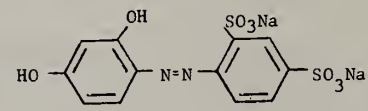
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
545. o-AMINOAZOTOLUENE (Continued)								
Andervont, H. B., 1958	34 mice	C3H	F	10 mg. at 4 wk. intervals for total of 7 injs.	S.C. r. axillary region.	Tumors[3944, 3945]		21 wks.
	53 mice[3946]	C3H	M	10 mg. at 4 wk. intervals for total of 7 injs.	S.C. r. axillary region.	Tumors[3947, 3948]		21 wks.
Gel'shtein, V. I., 1958	Mice	C3HA		1% soln. in benzene thrice wkly	Skin	Tumors[3933]	Killed at 2–3 mos. & 11–17 mos.	Up to 17 mos.
Gel'shtein, V. I., Biull. eksper. biol. i med., *46*, 96–100 (1958).	Mice			1% in benzene for 2 to 2.5 mos	Skin	Tumors[5434]		At least 3 mos.
Terayama, H., et al., 1958	Rats	Albino	M	0.1% dissolved in olive oil in diet fed ad. lib.	P.O	0[3934]	Sacrificed at 10–20 d. intervals.	At least 204 d.
Emmelot, P., et al., 1959	125 mice	CBA	F	1 mg. once wkly. increasing to 5 times wkly. after 5 mos.	P.O	Tumors[3935]		At least 12 mos.
Korosteleva, T. A., and Prokof'eva, O. G., 1959.	100 mice	A, C3HA	M	0.1 ml. of 1% soln. in sunflower oil in food, daily for 100 d.	P.O	Tumors[3936]	10–15 killed at various intervals.	13 mos.
546. 4-AMINO-3-DIPHENYLYL SODIUM SULFATE 								
Bonser et al., 1956b	21 mice	Albino		Paraffin wax pellet.[3937]	Implantation into lumen of the bladder.	Tumors[3938]	1 killed before 35 wks.	40 wks.
547. 3-AMINO-4-(*M*-SULFOPHENYLAZO)-2,7-NAPHTHALENEDISULFONIC ACID-TRISODIUM SALT 								
Hecht, G., and Wingler, A., 1952.	10 rats (50–55 g).		M	0.1%–0.02% mixed with the food	P.O	0	9 at 8 mos	At least 410 d.

[3933] Hepatomas. Biochemical Study.
[3934] Hepatic cirrhosis at 204 days.
[3935] Hepatomas at 11–12 mos.
[3936] Hepatomas at 12–13 mos. (1 with pulmonary metastases). Biochemical Study.
[3937] Dosage not specified.
[3938] 1 benign urinary cystic tumor. 1 invasive carcinoma.
[3939] 4-O-tolyazo-O-toluidine.
[3944] 24 with hepatomas, avg. 2.9/mouse.
[3945] 1/30 untreated controls with hepatoma.
[3946] Mammary tumor agent and agent-free mice.
[3947] 30 with hepatomas, avg. 1.8/mouse.
[3948] 22/45 untreated controls with hepatomas.

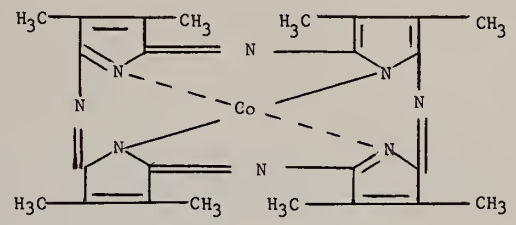
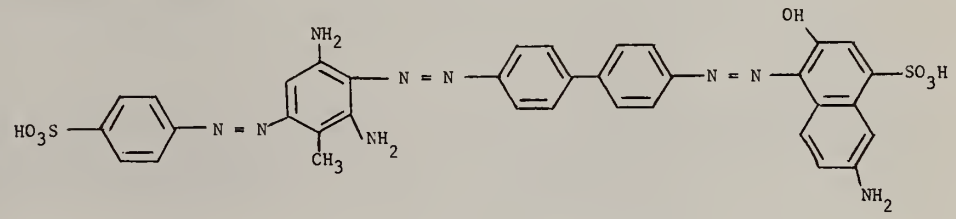
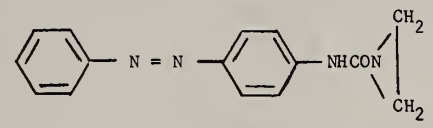
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
548. AZO BLUE 								
Oka, K., et al., 1957	Rats			0.5 cc. of 1% soln. once/wk	Inj	0		Prolonged period.
Ooneda, G., et al., 1957	Rats		M & F	0.5 cc. of 1% soln. in dist. water once/wk.	S.C	0		365 d.
549. 2,2′-AZONAPHTHALENE 								
Badger, G. M., et al., 1954	10 rats	Wistar hooded		0.06% in diet for 6 mos	P.O	0	9 at 6 mos	6 mos.
	9 rats			0.06% in diet for 180 d	P.O	0		180 d.
550. AZOORSEILLIN 								
Oka, K., et al., 1957	Rats			0.5 cc. of 1% soln. once/wk	Inj	0		Prolonged period.
Ooneda, G., et al., 1957	Rats		M & F	0.5 cc. of 1% soln. in dist. water once/wk.	S.C	0		365 d.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
551. BENZENEAZO-2-ANTHROL 								
Bonser, et al., 1956c	15 mice	Stock Albino	F	0.2 cc. of 3% susp. in arachis oil. twice wkly. for 52 wks. (Total dose per mouse, 624 mg.)	S.C	Tumors[3949]	12 alive at 20 wks	70–89 wks.
	15 mice	Stock Albino	M	0.2 cc. of 3% susp. in arachis oil, twice wkly. for 52 wks. (Total dose per mouse, 624 mg.)	S.C	Tumors[3950]	10 alive at 20 wks	70–89 wks.
552. 1-BENZENEAZONAPHTHALENE 								
Badger, G. M., et al., 1954	10 rats	Wistar hooded		0.06% in diet for 6 mos	P.O	0	5 at 6 mos	6 mos.
	5 rats			0.06% in diet for 180 d	P.O	0		180 d.
553. 2-BENZENEAZONAPHTHALENE 								
Badger, G. M., et al., 1954	10 rats	Wistar hooded		0.06% in diet for 6 mos	P.O	0	6 at 6 mos	6 mos.
	6 rats			0.06% in diet for 180 d	P.O	0		180 d.
554. 4,4′-BIS (DIMETHYLAMINO)-AZOBENZENE[3951] (SEE ALSO COMPOUND 576) 								
Miller, J. A., et al., 1957	16 adult rats	Albino, Holtzman.	M	2.67 mM/kg. of diet for 15 mos	P.O	0	13 alive at end of 15 mos.	17 mos.

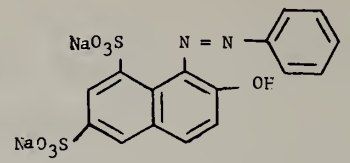
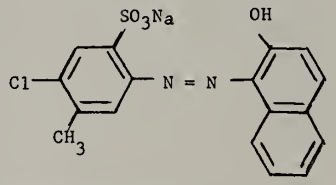
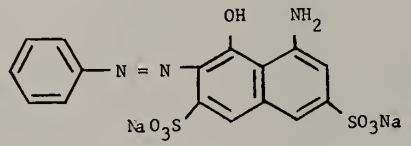
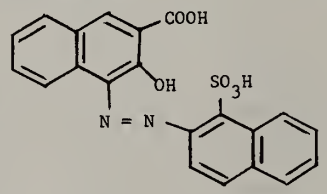
[3949] 4 lymphomas, 1 S.C. sarcoma.
[3950] 2 S.C. sarcomas, 1 orbital squamous cell carcinoma, 1 hepatoma.
[3951] Possibility of poor absorption based on detection in feces.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
555. 2′-CARBOXY-4-DIMETHYLAMINOAZOBENZENE  $C_{15}H_{15}N_3O_2$								
Crabtree, H. G., 1955	16 rats	Glaxo		0.06% in diet	P.O	Tumors[3952]		Up to 600 d.
556. 3′-CARBOXY-4-DIMETHYLAMINOAZOBENZENE 								
Crabtree, H. G., 1955	16 rats	Glaxo		0.06% in diet	P.O	Tumors[3953]		Up to 600 d.
557. CARMOISINE 								
Bonser, et al., 1956	15 mice	Stock Albino	M	0.1 cc. of 3% susp. in arachis oil (increased to 6% after 6 mos.) twice wkly. for 52 wks. (Total dose, 468 mg.)	S.C	1 (benign intestinal polyp).	Only 1 alive at 20 wks.	50–69 wks.
	15 mice	Stock Albino	F	0.1 cc. of 3% susp. in arachis oil (increased to 6% after 6 mos.) twice wkly. for 52 wks. (Total dose, 468 mg.)	S.C	7 (lymphomas).	11 alive at 20 wks.	70–89 wks.
558. CHRYSOIN S G X 								
Klinke, unpublished data[3916]	85 rats			10–15 mg. as 0.1% in food for duration.	P.O	0		

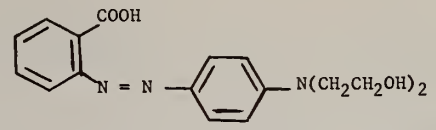
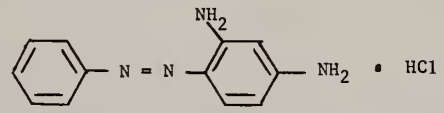
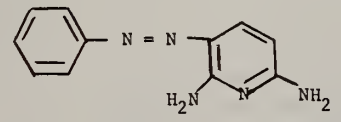
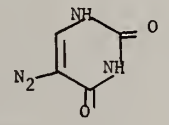
[3916] Recorded in Toxikologische Daten, etc.
[3952] 1 hepatic tumor.
[3953] 2 hepatic tumors.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
559. COBALT OCTAMETHYLTETRAZAPORPHIN 								
Haddow, A., and Horning, E. S., 1960.	20 mice	Stock		0.5 mg. wkly. for 8 wks	S.C	0	20 at 8 mos	8 mos. to date.
560. COLUMBIA BROWN R 								
Klinke, unpublished data[3916]	75 rats			10–15 mg. as 0.1% in food for 450 d., total dose 5.3 g./animal.	P.O	0[3954]		450 d.
561. p-N-CYCLO-ETHYLENEUREIDOAZOBENZENE 								
Walpole, A. L., et al., 1954	6 rats	Albino	F	Total of 114 mg./100 g. in total of 7.6 ml./100 g. arachis oil[3955] twice wkly. for 108 dosing d.	S.C. r. flank	Tumors[3956, 3957]	2 died at 347 & 375 d. respectively.	515 d.
	6 rats	Albino	M	Total of 111 mg./100 g. in total of 7.4 ml./100 g. arachis oil[3955] twice wkly. for 108 dosing d.	S.C. r. flank	Tumors[3957, 3958]	3 died at 307, 549, 570 d. respectively.	570 d.

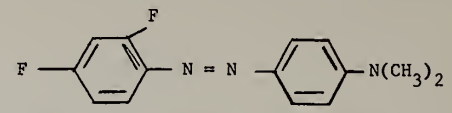
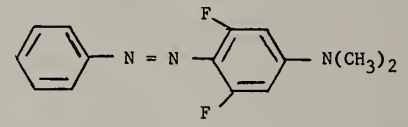
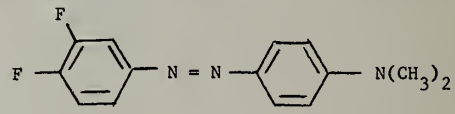
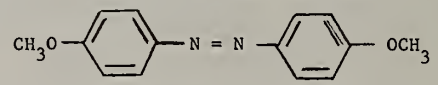
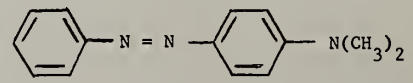
[3916] Recorded in Toxikologische Daten, etc.
[3954] 2 gastric carcinomas.
[3955] Sterilized (140° C. for 1 hr.).
[3956] 4 with injection site sarcoma.
[3957] 12 arachis oil controls with 5 injection site sarcomas, 3 "other site" tumors.
[3958] 3 with injection site sarcoma, 1 enteric adenoma.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
562. D & C ORANGE NO. 3 								
Hansen, W. H., et al., 1960	50 rats[3959]	Albino	25 F, 25 M	0.25, 0.5, 1.0, 2.0 & 5.0% in diet for 90 d.	P.O.	0		90 d.
563. D & C RED NO. 8 								
Hansen, W. H., et al., 1960	40 rats[3959]	Albino	20 M, 20 F	0.25, 0.5, 1.0 & 2.0% in diet for 90 d.	P.O.	0		90 d.
564. D & C RED NO. 33 								
Hansen, W. H., et al., 1960	50 rats[3959]	Albino	25 F, 25 M	0.25, 0.5, 1.0, 2.0, & 5.0% in diet for 90 d.	P.O.	0		90 d.
565. D & C RED NO. 34 								
Hansen, W. H., et al., 1960	50 rats[3959]	Albino	25 F, 25 M	0.25, 0.5, 1.0, 2.0, & 5.0% in diet for 90 d.	P.O.	0		90 d.

[3959] 10/group.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
566. D & C RED NO. 39 								
Hansen, W. H., et al., 1960	40 rats[3959]	Albino	20 F, 20 M	0.25, 0.5, 1.0 & 2.0% in diet for 90 d.	P.O	0		90 d.
567. 2,4-DIAMINOAZOBENZENE-4-HYDROCHLORIDE[3960] 								
Zygmunt, A., 1956	120 mice	C57BL	M & F	0.2% in diet for 13 mos	P.O	Tumors[3961]		Over 14 mos.
568. 2,6-DIAMINO-3-PHENYLAZOPYRIDINE 								
Allen, M. J., et al., 1957	20 mice			1 part/4 parts cholesterol in 9–11 mg. pellet implant.	Urinary bladder	Tumors[3962, 3963]	10 at 52 wks	52 wks.
569. DIAZOURACIL 								
Sassenrath, E. N., et al., 1959	Mice			20 mg./kg./d	I.P	0[3964]		Up to 9 wks.
	Rats			740/mg./kg./d	P.O	0[3965]		Up to 9 wks.
	Mice			5 mg./kg./d	I.P	0[3964]		Up to 9 wks.
	Mice			7.5 mg./kg./d	I.V	0[3964]		Up to 9 wks.

[3959] 10/group.
[3960] Chrysoidine.
[3961] 24% with hepatic adenoma, 48% with hepatocellular carcinoma.
[3962] Urinary cystic tumors: 2 with papillomas/adenomas, 2 with carcinomas.
[3963] 1/24 cholesterol controls with urinary cystic carcinoma.
[3964] Bone marrow and hepatic "damage."
[3965] Hepatic and splenic "damage."

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
570. 2′,4′-DIFLUORO-4-DIMETHYLAMINOAZOBENZENE 								
Miller, E. C., et al., 1958	10 rats	Albino		0.063% in diet for 3 wks., off 4 d., then 0.059% for 10 wks.	P.O	Tumors[3966]	8 at 3 mos	5 mos.
571. 2,6-DIFLUORO-4-DIMETHYLAMINOAZOBENZENE 								
Miller, J A., et al., 1957	14 adult rats	Albino, Holtzman.	M	Dissolved in corn oil, 2.40 mM/kg. of diet for 7 mos.	P.O	0	All alive at 8 mos	11 mos.
572. 3′,4′-DIFLUORO-4-DIMENTHYLAMINOAZOBENZENE 								
Miller, J. A., et al., 1957	15 adult rats	Albino Holtzman.	M	Dissolved in corn oil, 2.40 mM/kg. of diet for 3 mos.	P.O	13 (hepatomas)[3967].	13 alive at 4 mos	4 mos.
573. 4,4′-DIMETHOXYAZOBENZENE 								
Badger, G. M., et al., 1954	10 rats	Wistar hooded		0.06% in diet for 6 mos	P.O	0	8 at 6 mos	6 mos.
574. p-DIMETHYLAMINOAZOBENZENE 								
Kishi, S., and Haruno, K., 1952	8 rats	Albino, mixed		0.06% in rice diet for 9–20 wks	P.O	Tumors[3968]		20 wks.
	37 rats	Albino, mixed		0.06% in rice diet for 9–20 wks. then fed normal diet for 2–3 wks.	P.O	Tumors[3969]		Up to 23 wks.
Mori, K., et al., 1952	Rats	Albino	M	In diet for 12 or 14 wks., then basal diet free from dye for 2 or 3 wks.	P.O	Tumors[3970]		17 wks.

[3966] 8 with hepatoma at 5 mos.
[3967] Gross hepatic cirrhosis at treatment termination.
[3968] 1 hepatoma.
[3969] 5 hepatomas.
[3970] Hepatic carcinoma.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
574. p-DIMETHYLAMINOAZOBENZENE (Continued)								
Mori, K., and Momori, S., 1952.	29 rats			0.06% in diet for 12 or 14 wks	P.O	Tumors[3969]	All sacrificed	Up to 14 wks.
	43 rats			0.06% in diet for 12 or 14 wks. then placed on normal rice diet for 2 or 3 wks.	P.O	Tumors[3971]	All sacrificed	Up to 17 wks.
Cerecedo, L. R., et al., 1953	18 rats	Sprague-Dawley.	M	0.06% in Vitamin A deficient diet for 90 d., then supplemented with Vitamin A.	P.O	Tumors[3972]	Killed from 31–172 d.	172 d.
	11 rats	Sprague-Dawley.	M	0.06% in Vitamin A supplemented diet for 150 d.	P.O	Tumors[3973]	Killed from 30–150 d.	150 d.
Corre-Hurst, L., et al., 1953	9 rats		M	0.6 g./kg. food (approx. 6 mg. daily of azo dye).	P.O	Tumors[3968]		232 d.
Graffi, A., et al., 1953	100 mice		M	3 drops 5% in acetone once wkly. followed by 1 drop 5% croton oil in mineral oil once wkly.	Skin	0	0 at 12th mo	12 mos.
Iwase, S., and Fujita, K., 1953.	10 rats	Albino		0.02% DAB in diet (unpolished rice).	P.O	6[3974]	3 at 198 d	At least 198 d.
Kaziwara, K., 1953	65 rats	Non-pure		0.05% in diet for 100 d	P.O	Tumors[3975]	60 rats died during 100 d. of feeding.	About 200 d.
Kaziwara, K., 1953	36 rats	Non-pure		0.05% in diet for 100 d	P.O	Tumors[3976]	24 animals died within 100 d. of feeding.	About 200 d.
Kocke, H. U., 1953	29 mice (15–20 g.).	Albino		1 mg. in 4% agar (8 mm.^{3})	S.C. implant	0	7 at 5 mos	
Badger, G. M., et al., 1954	20 rats	Wistar hooded		0.06% in diet for 6 mos	P.O	Tumors[3977]	15 at 6 mos	6 mos.
Bassi, M., and Bernelli-Zazzera, A., 1954.	200 rats	Albino	M & F	0.06 in the diet	P.O	Tumors[3978]		Up to 180 d.
Brown, E. V., et al., 1954B	10 rats	Sprague-Dawley.	M	0.06% in the diet throughout experiment.	P.O	Tumors[3971]	Sacrificed at intervals.	10 mos.
Brown E. V., et al., 1954A	10 rats	Sprague-Dawley.	M	0.06% in the diet throughout experiment.	P.O	7[3979]	Sacrificed at intervals.	10 mos.
Carruthers, C., et al., 1954	6 rats			0.06% in the diet for 7 wks. or 8 mos.	P.O	Hepatomas [3980].	Sacrificed at intervals.	8 mos.
Ceselli, C. A., and Guzzi, M. L., 1954.	30 rats			0.06% in the diet	P.O	([3981])		Up to 180 d.

[3968] 1 hepatoma.
[3969] 5 hepatomas.
[3971] 7 hepatomas.
[3972] Early lesions: cholangiomas, hepatic carcinomas, hepatomas with metastases.
[3973] Hepatomas with metastases.
[3974] Hepatic carcinoma.
[3975] 3 hepatic tumors (hepatoma, cholangioma, cholangiohepatoma).
[3976] 9 hepatic tumors (hepatoma, cholangioma, cholangiohepatoma).
[3977] 100% hepatomas.
[3978] Hepatomas. Biochemical Study.
[3979] Hepatomas.
[3980] Biochemical Study.
[3981] Hepatic infrared spectrography study.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
574. p-DIMETHYLAMINO ZOBENZENE (Continued)								
DeLamirande, G., et al., 1954	6 rats	White Wistar		0.06% incorporated in a semi-synthetic diet for 90 d.	P.O	Tumors[3970]	All killed at end of experiment.	90 d.
Druckrey H., 1954	Rats			5 mg. daily for 100 d.—500 mg. total dose.	P.O	Tumors[3982]		
	Rats			5 mg. daily for 40 d.—300 mg. total dose.	P.O	Tumors[3983]		
	Rats			5 mg. daily for 60 d.—300 mg. total dose.	P.O	Tumors[3984]		
	Rats			5 mg. daily for 140 d.—700 mg. total dose.	P.O	Tumors[3985]		
	Rats			5 mg. daily for 200 d.—1 g. total dose	P.O	Tumors[3986]		
Fischer, W., 1954	10 hamsters	Syrian golden		30 mg. per d		Tumors[3987]	3 still living	At least 446 d.
	5 rats	Albino		20–30 mg. per d. dissolved in neat's foot oil & mixed into food.	P.O	Tumors[3988]		214–282 d.
	17 mice					0[3989]		
Gillman, J., et al., 1954	40 rats	Wistar		20 cc. of a 3.0% soln. in arachis oil added to each kg. of diet.[3990]	P.O	Tumors[3991]	Sacrificed at intervals.	
	19 rats	Wistar	M & F	20 cc. of a 3.0% soln. in arachis oil added to each kg. of diet.[3992]	P.O	0[3993]	78–142 d	
	40 rats	Wistar		Fed in stock diet[3994]	P.O	Tumors[3995]	Sacrificed at wkly. intervals for 6 wks., then at mthly. intervals.	
	10 rats	Wistar	F	20 cc. of 3% soln. in arachis oil/kg. of food (Coward's diet).[3996]	P.O	0[3997]	79–142 d	142 d.
	9 rats	Wistar	M	20 cc. of 3% soln. in arachis oil/kg. of food (Coward's diet).[3996]	P.O	0	78–96 d	96 d.
Haruno, K., 1954	Rats	Albino		0.6 g. in 20 g. soy bean oil & 1 kg. of rice for 120–150 d. Part of the rats returned to normal diet for 30–40 d.	P.O	Tumors[3998]	All sacrificed	150–190 d.

[3970] Hepatic carcinoma.
[3982] 49% hepatomas.
[3983] 20% hepatomas.
[3984] 26% hepatomas.
[3985] 80% hepatomas.
[3986] 81% hepatomas.
[3987] Abdominal carcinoma (probably of hepatocellular origin).
[3988] 5/5 hepatocholangiocarcinomas.
[3989] No details.
[3990] Complete diet.
[3991] Hepatomas and cholangiomas.
[3992] Coward's diet (fat and fat soluble vitamin deficient).
[3993] Hepatic nodular hyperplasia. Conclusion: diet increase sensitivity to dye carcinogenicity.
[3994] Stock diet: 44.5% flour, 18.7% dried skimmed milk, 12.5% Mealie meal, 2.6% brewer's yeast, 1.7% salt, 6.0% fat, 2.0% raw linseed oil, 2% vitaminized oil, 10% cooked spleen.
[3995] 100% cholangeal hyperplasia (some progressed to hepatic carcinoma).
[3996] Coward's diet: 71% dextrinized corn starch, 15% casein, 10% brewer's yeast, 4% salts.
[3997] 100% hyperplasia; 5 with nodular hyperplasia.
[3998] Hepatomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
574. p-DIMETHYLAMINOAZOBENZENE (Continued)								
Ichii, S., et al., 1954	Rats[119]	Albino		0.6 g./kg. of rice diet for 4 mos. Then fed basal diet (free of carcinogen) for 1 mo.	P.O	Tumors[3970]	All sacrificed at end of experiment.	5 mos.
Ichii, S., et al., 1954	60 rats[3999]	Wistar	M	0.06% in diet, fed for 4 mos. Then put on normal rice diet for 1 mo.	P.O	Tumors[3970]	5 mos., all sacrificed.	5 mos.
Iwase, S., and Fujita, K., 1954	10 rats[4000]			0.02% for 3 wks. then 0.06% for 198 d. Then interrupted for unknown time.	P.O	Tumors[4001]	7 survived 165 d	351 d.
	20 rats[4002]			0.06% for 6 mos	P.O	Tumors[4003]	11 survived 161 d	254 d.
	10 rats[4004]			0.06% for 6 mos	P.O	Tumors[4005]	100%	199 d.
Iwata, H., and Itano, T., 1954	52 rats		M & F	0.06% in cod liver oil in a rice diet for 100 d.	P.O	Tumors[4006]	19 survived 166 d	166 d.
Jacobson, G. A., 1954	Rats			0.06% in fat-free basal diet[4007]	P.O	Tumors[4008]	Sacrificed at 8, 14 & 22 wks.	22 wks.
Kaziwara, K., et al., 1954	16 rats			0.05% daily feedings for 138 d	P.O	Tumors[4009]	11 survived 200 d	200 d.
Kimura, T., 1954	Rats			0.06% in rice diet continuously	P.O	Tumors[4010]	7 survived 150–180 d.	180 d.
	Rats			0.06% in rice diet continuously	P.O	Tumors[4011]	5 survived 120–150 d.	150 d.
Kishi, S., et al., 1954	Rats	Albino		0.06% in rice diet for 120–150 d. Large part of group was placed then on a normal diet for 30–40 d.	P.O	Tumors[4012]	All sacrificed at end of experiment.	150–190 d.
Kishi, S., and Haruno, K., 1954.	Rats	Albino-mixed		0.6 g. in 20 g. soy bean oil & 1 kg. rice for about 150 d., then placed on normal diet for several wks.	P.O	Tumors[3998]	All sacrificed at end of experiment.	At least 150 d.
Lopez, M., 1954	109 rats	Albino		0.04–0.1% in olive oil in the diet	P.O	Tumors[4013]	Sacrificed at intervals.	6 mos.
Matsumoto, S., and Oota, K., 1954.	10 rats	Albino	M & F	2 mg./rat/d., in diet of Margarin, Meiji 70 g., casein 2 g., Ebios 5 g., $CaCO_3$ 2 g., NaCl 1 g., cod liver oil 0.3 g. Average intake of 675 mg.	P.O	Tumors[4014]	8 died within 5 wks., 2 survived 340 d.	342 d.

[119] Adult.
[3970] Hepatic carcinoma.
[3998] Hepatomas.
[3999] Age: approx. 2 mos.
[4000] Weight 80–90 g.
[4001] Hepatic: 2 at 6 mos., 2 at 7–8 mos.; 2 at 9–12 mos.
[4002] Weight 150 g.
[4003] 3 hepatic in 9 mo. survivors.
[4004] Weight 80–100 g.
[4005] 10 hepatic.
[4006] 12 hepatic carcinomas.
[4007] Supplemented with various levels of oils and riboflavin.
[4008] Hepatic.
[4009] 3 hepatomas in early deaths; 4 in 200 day survivors. 5 cholangiomas, 2 hepatic adenomatous lesions.
[4010] 4 cholangiomas, 2 hepatic cholangiocarcinomas.
[4011] 2 cholangiomas, 1 hepatic cholangiocarcinoma.
[4012] Hepatomas developed in interrupted treatment group.
[4013] Cholangiomas and hepatomas. No major difference between histologic changes in hepatectomized and intact groups.
[4014] 2 (100%) hepatomas with pulmonary metastases.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
574. p-DIMETHYLAMINOAZOBENZENE (Continued)								
	Rats, 25	Albino	M & F	2 mg./rat/d. in diet of Crisco 70 g., casein 20 g., Ebios 5 g., $CaCO_3$ 2 g., NaCl 1 g., cod liver oil 0.3 g. Intake over 771.6 mg.	P.O	Tumors[4015]	15 survived 300 d. or more.	473 d.
	1 rat			832 mg. total feeding, Crisco diet.[4016]	P.O	Tumor[4017]	387 d	387 d.
	1 rat			590 mg. total feeding, rice diet.[4016]	P.O	Tumor[4017]	178 d	178 d.
	1 rat			566 mg. total feeding rice diet.[4016]	P.O	Tumor[4018]	182 d	182 d.
	25 rats	Albino		0.06% in Crisco diet	P.O	Tumors[4019]	15 survived 300 d	300 d.
	10 rats	Albino		0.06% in a butter diet	P.O	Tumors[4020]	2 survived 300 d	300 d.
	70 rats	Albino		0.06% in rice diet	P.O	Tumors[4021]	34 survived 150 d	150 d.
	1 rat			832 mg. total feeding, Crisco diet.[4016]	P.O	Tumor[4022]	378 d	378 d.
	1 rat			566 mg. total feeding, rice diet.[4016]	P.O	Tumors[4017]	166 d	166 d.
	1 rat			592 mg. total feeding, rice diet.[4016]	P.O	Tumor[4023]	175 d	175 d.
	1 rat			541 mg. total feeding, rice diet.[4016]	P.O	Tumor[4024]	156 d	156 d.
	1 rat			673 mg. total feeding, rice diet[4016]	P.O	Tumor[4025]	173 d	173 d.
Sayama, Y., et al., 1954	150 rats	Hybrid-Albino	M	0.09% in rice diet for period of 11 wks. Then fed a basal diet for 9 wks.	P.O	Tumors[4026]	All sacrificed at end of experiment.	20 wks.
Sugira, K., et al., 1954	15 rats	Sherman	M	0.06% in the diet for 75–250 d	P.O	Tumors[4027]	9 at 250 d	250 d.
Symeonides, A., et al., 1954	39 rats	Osborne-Mendel.	M	0.06 g./100 g. diet	P.O	Tumors[4028]	36 at 189 d	At least 189 d.
	112 rats[4029]	Osborne-Mendel.	M	0.06 g./100 g. diet	P.O	Tumors[4030]	29 at 189 d	At least 189 d.
Takahashi, T., 1954	Rats	Albino	M	0.6 g./kg. of rice for 4 mos. Then fed basal diet free from dye for 1 mo.	P.O	Tumors[3970]	5 mos	5 mos.
Toth, E., et al., 1954	40 rats[4031]	Albino	M & F	7.2 mg. daily in semi-synthetic normal diet.	P.O	Tumors[3968]	30 at 5 mos	5 mos.
	98 rats[4031]	Albino	M & F	6.4 mg. daily in semi-synthetic deficient diet.	P.O	Tumors[4032]	73 at 5 mos	5 mos.

[3968] 1 hepatoma.
[3970] Hepatic carcinoma.
[4015] 14 (93.3%) hepatomas in 33 + day survivors (with pulmonary metastases).
[4016] Experimental details reported elsewhere.
[4017] Solid hepatoma.
[4018] Hepatoma.
[4019] 14 survivors with hepatic tumor nodule.
[4020] 2 survivors with hepatic tumor nodule.
[4021] 27 hepatic.
[4022] Trabecular hepatoma, cholangioma.
[4023] Cholangioma.
[4024] Cholangiocarcinoma, adenohepatoma.
[4025] Cholangiomatous adenocarcinoma.
[4026] 56.3% with 1 hepatoma, 5 mixed, 3 cholangioadenocarcinomas.
[4027] 14 with cholangiomas/hepatomas. (6 metastases).
[4028] 8 hepatomas. 20 with hepatic lesions (some neoplastic).
[4029] Adrenalectomized.
[4030] 2 hepatomas. 12 with hepatic lesions (some neoplastic).
[4031] Weight 80–120 g.
[4032] 70 with cholangeal and hepatocellular carcinomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
574. p-DIMETHYLAMINOAZOBENZENE (Continued)								
Asano, B., 1955	25 rats	White-Wistar, mixed.		0.06% incorporated in diet for 120 d. Then placed on basal diet for 50–60d.	P.O	Tumors[4033]	Duration of experiment.	170–180 d.
Chiuma, E., et al., 1955	Rats			0.09% in normal diet	P.O	Tumors[3970]		
Crabtree, H. G., 1955	16 rats	Glaxo		0.04% in basic diet	P.O	Tumors[4034]	Avg.: 186 d	200 d.
Cudkowicz, G., 1955	33 rats	Albino	M	0.06% in Cantero or Coward diet for 150 & 60 d. respectively.	P.O	([4035])	Sacrificed at intervals.	Up to 180 d.
de Duve, C., et al., 1955	Rats			4.5 mg. in olive oil in diet daily—8 mos.	P.O	Tumors[4036]		8 mos.
Haruno, K., and Kishi, S., 1955.	Rats			In normal diet for a long period of time.	P.O	Tumors[3970]	All sacrificed	
Iwase, S., and Fujita, K., 1955.	Rats			0.06% in rice diet supplemented with green vegetables for 12 mos., total of 600–700 mg.	P.O	Tumors[4037]		1 yr.
	26 rats			0.06% in diet	P.O	Tumors[4038]	All sacrificed 4–5 mos.	5 mos.
Kawasaki, Y., 1955	15 rats	Albino			P.O			At least 5 mos.
Kishi, S., et al., 1955	Rats[4039]	Albino, Wistar, mixed.		0.06% in diet for about 150 d. Interrupted with normal diet for 30–40 d.	P.O	Tumors[4040]	All sacrificed at end of experiment.	180–190 d.
de Lamirande et al., 1955	Rats	Wistar	M	0.06% carcinogen in diet for 150 consecutive d.	P.O	Liver Tumors.		
Mulay and Eyestone, 1955	30 rats[4041]	Osborn-Mendel.	F	Semi-synthetic diet containing 0.06% carcinogen for 286 d.[4042]	P.O	Tumors[4043]	24 at 14 mos	
	30 rats[4041]	Osborn-Mendel.	F	Semi-synthetic diet containing 0.06% carcinogen for 286 d.[4044]	P.O	Tumors[4045]	23 at 14 mos	
Oshima, F., et al., 1955	60 rats			0.06% in normal diet for 5 mos. Kept at altitude of 2800 m. Started about Aug. or Sept. Temp. at 10° C. atmospheric pressure 537 mmg.	P.O	Tumors[4046]	All sacrificed	5 mos.
	60 rats			0.06% in normal diet. Low altitude environment.	P.O	Tumors[4047]	All sacrificed	5 mos.
Pearson and Defendi, 1955	100 rats	Sprague-Dawley.		0.6 g./kg. of diet for $4\frac{1}{2}$ mos	P.O	Liver Tumors[4048].	Sacrificed at intervals.	8 mos.

[3970] Hepatic carcinoma.
[4033] 4 with hepatomas.
[4034] 100% hepatic (varied from "large" to "palpable").
[4035] Study of catalase-hydrogen peroxide system.
[4036] Hepatic. Biochemical Study.
[4037] Near 100% hepatic carcinomas with abdominal node and pulmonary metastases.
[4038] 5/8 with hepatic at 5 mos. 13/14 hepatic at 5 mos.
[4039] Weight 100 g.
[4040] Hepatomas.
[4041] Age at beginning 4 mos.
[4042] 8% casein (12% in original diet).
[4043] Negative necropsy up to age 18 mos. Of 18+ mos. survivors: 15 (68%) with adrenocortical adenomas, 1 with adrenocortical adenocarcinoma.
[4044] 6% casein (12% in original diet).
[4045] Negative necropsy up to age 18 mos. except 1 adrenocortical adenoma. Of 18+ mos. survivors: 15 (75%) with adrenocortical adenomas; 3 animals (15%) with adrenocortical adenocarcinomas (2 with hepatic and pulmonary metastases).
[4046] 55.5% hepatic at 150 days.
[4047] 92.9% hepatic at 150 days.
[4048] Cholangeal adenocarcinomas and hepatomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
574. p-DIMETHYLAMINOAZOBENZENE (Continued)								
Rodriguez, N. M., and Cerecedo, L. R., 1955.	9 rats	Sprague-Dawley.	M	In synthetic diet, which contained 5,000 I.U. of Vit. D and 67,500 I.U. Vit. A/kilo of diet, supplemented with low-riboflavin diet (66 mg./kg. diet) for 128 d.	P.O	(4049)	128 d	128 d.
	2 rats	Sprague-Dawley.	M	In synthetic diet, containing 5,000 I.U. of Vit. D & 67,500 I.U. Vit. A/kilo of diet, supplemented with a high-riboflavin diet (66 mg./kg. diet) for 30, 60, 100, 128 d. respectively.	P.O	(4049)	100%	128 d.
	7 rats	Sprague-Dawley.	M	In synthetic diet containing 5,000 I.U. of Vit. D & 67,500 I.U. Vit. A/kilo of diet, supplemented with a low-riboflavin diet (66 mg./kg.) for 100 d.	P.O	(4049)	100 d	100 d.
	6 rats	Sprague-Dawley.	M	In synthetic diet which contained 5,000 I.U. of Vit. D & 67,500 I.U. Vit. A/kilo of diet, supplemented with a low-riboflavin diet (66 mg./kg.) for a period of 30 d.	P.O	(4049)	30 d	30 d.
	4 rats	Sprague-Dawley.	M	In synthetic diet containing 5,000 I.U. of Vit. D & 67,500 I.U. Vit. A/kilo of diet, supplemented with a low-riboflavin diet (66 mg./kg. diet) for 60 d.	P.O	(4049)	60 d	60 d.
	24 rats	Sprague-Dawley.	M	In synthetic diet, which contained 5,000 I.U. of Vit. D & 67,500 I.U. of Vit. A/kilo of diet.	P.O	(4049)		
Rodriguez, N. M., et al., 1955	34 rats			In food[4050]	P.O	Tumors[4051]		
Sugar, J., and Lapis, K., 1955	24 rats	White	M & F	0.008 g. daily	P.O	Tumors[4052]	Killed from 2 wks.—8 mos.	8 mos.
Szego, C. H., 1955	Rats	Sprague-Dawley.	F	0.06% in low protein diet up to 165 d.	P.O	Tumors[4053]		165 d.
Cerecedo, L. R., et al., 1956	8 rats	Sprague-Dawley.		0.06% in diet supplemented with riboflavin, 66 mg./kg. diet up to 128 d.	P.O	0[4054]	Killed at intervals up to 128 d.	128 d.
	47 rats	Sprague-Dawley.		0.06% in synthetic diet up to 132 d	P.O	0[4054]	Killed at intervals up to 132 d.	132 d.
Crabtree, 1956	16 rats[4055]	Wistar	M & F	Rat cube diet containing substance at level of 0.04%.	P.O	14 (liver tumors)[4056].		At least 225 d.

[4049] Biochemical Study.
[4050] High and low level riboflavin diets.
[4051] 12 hepatomas.
[4052] Hepatomas.
[4053] Induced primary hepatomas, histologically mixed adenocarcinoma and cholangioma.
[4054] Biochemical Study.
[4055] Age at beginning 3–4 mos.
[4056] First palpable tumor at 140 days.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
574. p-DIMETHYLAMINOAZOBENZENE (Continued)								
Fujita, K., et al., 1956	3 rats	Mixed		In diet for 6 wks	P.O	(4057)		6 wks.
	10 rats	Mixed		0.06% in rice diet, total 600–700 mg./rat.	P.O	Tumors[4058]	100%	199 d.
	16 rats	Mixed		0.06–0.09% in diet, total of 650 mg./rat.	P.O	0[4069]	15 alive at 5 mos	5 mos.
	6 rats	Mixed		0.06% in diet for 6 wks	P.O	0[4060]		6 wks.
	1 rat	Mixed		0.06% in diet for 6 wks	P.O	0[4060]		6 wks.
Fukuoka, Y., 1956	16 rats	Albino		Routine cancer diet fed up to 22 wks	P.O	Tumors[4061]	Killed at intervals	At least 22 wks.
Haruno, K., 1956	Rats	Albino	M	0.06% in diet for 120 d., fed basal diet only for 50–60 d. more.	P.O	Tumors[3979]		Up to 180 d.
Ito, N., et al., 1956	8 rats	Hybrid-Albino	M & F	0.06% in basal diet for 12 wks	P.O	0[4062]		12 wks.
	10 rats	Hybrid-Albino	M & F	0.06% in basal diet for 9 wks	P.O	0[4063]		9 wks.
	10 rats	Hybrid-Albino	M & F	0.06% in basal diet for 15 wks	P.O	0[4063]		15 wks.
Iwase, S., 1956	Rats			0.09% in diet	P.O	Tumors[3998]	Killed at 3–120 d. intervals.	At least 120 d.
Jedeikin, L., et al., 1956	Rats	Carworth Farms.		0.06% of diet	P.O	Primary hepatomas.	Killed at intervals	At least 601 d.
Kasai, T., et al., 1956	20 mice	White		6 mg. in rice diet supplemented with 200 μg. B_2.	P.O	0		More than 140 d.
	10 mice	White		6 mg. in rice diet supplemented with 5 mg. choline.	P.O	Tumors[4064]		More than 140 d.
	9 mice	White		6 mg. in rice diet supplemented with 200 μg. selenium & 100 μg. B_2.	P.O	0	All died by 119 d	119 d.
	31 mice	White		6 mg. in rice diet	P.O	Tumors[3969]		More than 138 d.
Kishi, S., et al., 1956	Rats	Albino	M	0.06% in diet for 120 d., fed normal diet for 50–60 d. more.	P.O	Tumors[3979]		Up to 180 d.
Lado, P., and Rabotti, G. C., 1956.	Rats	Albino	M	0.06 in a deficient diet for 5 mos	P.O	Tumors[4065]		At least 5 mos.

[3969] 5 hepatomas.
[3979] Hepatomas.
[3998] Hepatomas.
[4057] Study to estimate bound DAB.
[4058] 100% hepatomas.
[4059] Experiment incomplete.
[4060] Liver fraction studies.
[4061] Hepatomas and cholangiomas.
[4062] 5 with hepatic cirrhosis.
[4063] 4 with hepatic cirrhosis.
[4064] 4 hepatomas.
[4065] Hepatomas and cholangiomas. Liver protein viscosity study.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
574. p-DIMETHYLAMINOAZOBENZENE (Continued)								
Lauber, W., and Danneberg, P., 1956.	34 rats[4066]	BD		5 mg. daily in food	P.O	Tumors[4067]		Life.
	64 rats	BD		5 mg. daily in food for 40 d.—200 mg.	P.O	Tumors[4068]		Life, at least 40 d.
	78 rats	BD		5 mg. daily in food for 140 d.—700 mg.	P.O	Tumors[4069]		Life.
	145 rats[4070]	BD		5 mg. daily in food	P.O	Tumors[4071]		Life.
	80 rats	BD		5 mg. daily in food for 60 d.—300 mg.	P.O	Tumors[4072]		Life.
	158 rats	BD		5 mg. daily in food for 100 d.—500 mg.	P.O	Tumors[4073]		Life.
	45 rats	BD		5 mg. daily in food for 80 d.—400 mg.	P.O	Tumors[4074]		Life.
Le Breton, E., 1956	20 rats			0.06% in *Diet*	P.O	Tumors[4076]		36 mos.
Mori, K., et al., 1956	15 rats	Albino-Wistar		2.5% soln. (12.5 mg.) in soya bean oil in 0.5 cc. amt. every wk. for 200 d. Total of 350 d.	I.P	Tumors[4076]	9 survived 200 d	200 d.
	20 rats	Albino-Wistar	M	0.6 g. dissolved in 30 cc. soya bean oil, evenly mixed with 1 kg. of rice diet for 4 mos. Placed on normal diet for 1 mo.	P.O	Tumors[4077]	12 survived 150 d	150 d.
	20 rats	Albino-Wistar	M	0.6 g. dissolved in 30 cc. soya bean oil, evenly mixed with 1 kg. of rice diet for 4 mos. Then placed on normal diet for 1 mo.	P.O	Tumors[4078]	12 survived 150 d	150 d.
Odashima, S., 1956	29 mice	Non-pure		0.06% in diet for 120 d	P.O	Tumors[4079]	12 died within 380 d.	380 d.
Oshima, F., et al., 1956	36 rats	Mixed		0.06% in rice diet with vegetables for 120 d., total 450 mg./rat, then fed diet alone for 27 or 30 d.	P.O	Tumors[4080]	4 died, others killed.	150 d.
	49 rats	Mixed		0.06% in rice diet with vegetables for 123 d., total 450 mg./rat, then fed diet alone for 27 or 30 d. more.[4081]	P.O	Tumors[4082]	16 died, others killed.	150 d.

[4066] Age: 500 days.
[4067] 7 hepatocellular carcinomas; 6 cholangiocarcinoma (2 with metastases).
[4068] 6 hepatocellular carcinomas, 8 cholangiocarcinomas (7 with metastases).
[4069] 35 hepatocellular carcinomas, 27 cholangiocarcinomas (47 with metastases).
[4070] Age: 100 days.
[4071] 36 hepatocellular carcinomas, 35 cholangiocarcinomas (44 with metastases).
[4072] 2 hepatocellular carcinomas; 14 cholangiocarcinomas (15 with metastases).
[4073] 37 hepatocellular carcinomas, 38 cholangiocarcinomas (54 with metastases).
[4074] 10 hepatocellular carcinomas, 12 cholangiocarcinomas (18 with metastases).
[4076] 20 hepatomas.
[4076] 3 (33.3%) hepatic carcinomas.
[4077] 9 hepatic carcinomas (2 with pulmonary metastases).
[4078] 6 hepatic carcinomas (2 with pulmonary metastases).
[4079] 11 with hepatoma.
[4080] 8 hepatoma, 1 cholangioma, 1 mixed hepatic tumor at 120 days. 12 hepatoma, 5 cholangiomas, 3 mixed hepatic tumors. 1 anaplastic tumor at 150 days.
[4081] At 2800 m. altitude.
[4082] 6 hepatomas at 120 days. 2 hepatomas, 1 cholangioma, 8 mixed hepatic tumors at 150 days.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
574. p-DIMETHYLAMINOAZOBENZENE (Continued)								
Petermann, M. L., et al., 1956.	Rats	Sherman	M	0.06% of diet for 5 mos.[4083]	P.O	Tumors[4084]		9 mos.
	Rats	Sherman	M	0.06% of diet for 9 mos.[4085]	P.O	Liver Tumors[4086].		9 mos.
Sato, T., 1956	Rats	Albino	M	0.06% in diet for 120 d., fed basal diet only for 50–60 d. more.	P.O	Tumors[3979]		Up to 180 d.
Soto, H., et al., 1956	Mice			0.06% in rice diet	P.O	0[4054]		At least 24 wks.
	Rats			0.06% in rice diet	P.O	0[4054]		At least 24 wks.
Sugar, J., and Lapis, K., 1956	72 rats	White		0.008 g. in diet daily	P.O	Tumors[4087]	Killed from 2 wks.—8 mos.	8 mos.
Takagi, K., et al., 1956				0.06% in rice diet	P.O	0[4088]		18 wks.
Allen, M. J., et al., 1957	20 mice			1 part/4 parts cholesterol in 9–11 mg. pellet implant.	Urinary bladder	0[4089,4090]	14 at 40 wks	At least 40 wks.
Azuma, S., et al., 1957	12 rats			0.09% in food, high reticuloendothelial system function.	P.O	Tumors[4091]		
	4 rats			0.09% in food, low reticuloendothelial system function.	P.O	Tumors[4092]		
Baba, T., 1957	21 rats[4093]	Hybrid	M	0.02% 1st week, 0.04% 2nd wk., 0.06% in diet thereafter.	P.O	Tumors[4094]	10 at 160 d	160 d.
	30 rats	Hybrid	M	0.02% 1st wk., 0.04% 2nd wk., 0.06% in diet thereafter.	P.O	Tumors[4095]	11 at 160 d	160 d.
Cuendet, J. F., et al., 1957	1 rabbit			250 μg. to the choroid coat of the eye.	Orbital vein	0		6 mos.
	1 rabbit			500 μg. to the choroid coat of the eye.	Orbital vein	0		6 mos.
Fujita, K., et al., 1957	15 rats		14 M, 1 F	0.02% 1st mo., 0.04% 2nd mo., 0.06% in diet thereafter.	P.O	Tumors[4096]	12 at 200 d	200 d.
	16 rats		6 M, 10 F	0.06% for 2 mos., 0.09% in diet thereafter, total 628 mg.	P.O	Tumors[4097]	15 at 147 d	147 d.
Hughes, P. E., 1957	Rats	Sprague-Dawley-Holtzman.		0.06% in semi-synthetic diet with 2 mg. riboflavin/kg. diet for 10–12 wks.	P.O	Tumors[4098]	Killed at fortnightly intervals.	12 wks.

[3979] Hepatomas.
[4054] Biochemical Study.
[4083] Dye added to rice-carrot diet. Stock diet resumed for 4 mos. before killing.
[4084] Hepatomas and cholangiomas.
[4085] Rice-carrot diet until end.
[4087] Hepatomas and cholangiomas. Negative result replication cited.
[4089] Hepatic carcinoma.
[4088] Histological and E.M. study of early changes.
[4089] 1 urinary cystic papilloma or adenoma.
[4090] 1/24 cholesterol controls with urinary cystic carcinoma.
[4091] 2 hepatomas.
[4092] 4 hepatomas.
[4093] Hypophysectomized 1 wk. before treatment.
[4094] 3 (30%) hepatomas. 10 hepatocellular adenomas.
[4095] 6 (54.5%) hepatomas. 7 hepatocellular adenomas.
[4096] 71.4% with hepatoma.
[4097] 100% hepatic carcinoma with metastases.
[4098] Hepatomas, cholangiomas (some metastases).

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
574. p-DIMETHYLAMINOAZOBENZENE (Continued)								
Kawasaki, Y., 1957	15 rats	Albino		With diet		1[4099]	At 5 mo. after treatment, 4 animals surv.	At least 5 mos.
Lopez, M., et al., 1957	27 rats	Albino	M	0.04–0.1% in olive oil in the diet	P.O	Tumors[4100]	Sacrificed at intervals after partial hepatectomy.	6 mos.
Maltoni, C., et al., 1957	40 rats[4101]		M & F	3% in arachis oil, added as 0.6% to the diet.	P.O	Tumors[4102]	Sacrificed at intervals.	Up to 4 mos.
Maisin, J., et al., 1957	50 rats	White	25 F & M	0.06% in olive oil in rice diet, avg. 7.5 gr. of rice/rat/d. for life.	P.O	Tumors[4103]	29 at 240 d	At least 240 d.
	Rats	White		0.06% in olive oil in rice diet	P.O	0[4104]	3 killed at fixed intervals.	At least 70 d.
Miller, J. A., et al., 1957	16 adult rats	Albino, Holtzman.	M	Dissolved in corn oil, 2.40 mM/kg. of diet for 4 mos.[4105]	P.O	10 (hepatomas)[4106].	All alive at end of 4 mos.	6 mos.
	16 adult rats	Albino, Holtzman.	M	Dissolved in corn oil, 2.40 mM/kg. of diet for 4 mos.	P.O	8 (hepatomas)[4107].	15 alive after 4 mos.	6 mos.
	15 adult rats	Albino, Holtzman.	M	Dissolved in corn oil, 2.67 mM/kg. of diet for 4 mos.	P.O	12 (hepatomas)[4108].	All alive after 4 mos.	6 mos.
	16 adult rats	Albino, Holtzman.	M	Dissolved in corn oil, 2.00 mM/kg. of diet for 3 mos.	P.O	4 (hepatomas)[4109].	All alive at end of 3 mos.	6 mos.
	14 adult rats	Albino, Holtzman.	M	Dissolved in corn oil, 2.14 mM/kg. of diet for 3 mos.[4110]	P.O	5 (hepatomas)[4107].	All alive at end of 3 mos.	4 mos.
	12 adult rats	Albino, Holtzman.	M	Dissolved in corn oil, 2.67 mM/kg. of diet for 4 mos.	P.O	12 (hepatomas)[4108].	All alive after 4 mos.	6 mos.
	15 adult rats	Albino. Holtzman.	M	Dissolved in corn oil, 2.67 mM/kg. of diet for 4 mos.	P.O	14 (hepatomas)[4108].	All alive after 4 mos.	6 mos.
	16 adult rats	Albino, Holtzman.	M	Dissolved in corn oil, 2.67 mM/kg. of diet for 4 mos.	P.O	15 (hepatomas)[4111].	All alive after 4 mos.	6 mos.
	14 adult rats	Albino, Holtzman.	M	Dissolved in corn oil, 2.67 mM/kg. of diet for 4 mos.	P.O	12 (hepatomas)[4112].	All alive after 4 mos.	6 mos.
	16 adult rats	Albino, Holtzman.	M	Dissolved in corn oil, 2.40 mM/kg. of diet for 4 mos.	P.O	13 (hepatomas)[4112].	All alive after 4 mos.	6 mos.
	16 adult rats	Albino, Holtzman.	M	Dissolved in corn oil, 2.40 mM/kg. of diet for 4 mos.	P.O	11 (hepatomas)[4112].	All alive at 5 mos.	6 mos.

[4099] Hepatic tumor.
[4100] Hepatomas and cholangiomas. Serum protein study.
[4101] 20 splenectomized.
[4102] Hepatomas. Earlier cholangeal proliferation in splenectomized animals.
[4103] 26 with hepatic carcinoma. 5 with hepatic cirrhosis.
[4104] Benign cholangiomatosis.
[4105] 2.67 mM/kg. of diet, for first 2 wks.; dye-free diet for 9 days, returned above level for duration.
[4106] Gross hepatic cirrhosis at end of treatment.
[4107] Gross hepatic cirrhosis at end of treatment.
[4108] Gross hepatic cirrhosis at end of treatment.
[4109] Gross hepatic cirrhosis at end of treatment.
[4110] 2.67 mM/kg. of diet, for first 6 wks.
[4111] Gross hepatic cirrhosis at end of treatment.
[4112] Gross hepatic cirrhosis at end of treatment.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
574. p-DIMETHYLAMINOAZOBENZENE (Continued)								
	16 adult rats	Albino, Holtzman.	M	Dissolved in corn oil, 2.40 mM/kg. of diet for 4 mos.	P.O	14 (hepatomas)[4112].	15 alive at 5 mos.	6 mos.
	16 adult rats	Albino, Holtzman.	M	Dissolved in corn oil, 2.40 mM/kg. of diet for 4 mos.	P.O	14 (hepatomas)[4112].	All alive at 5 mos.	6 mos.
Miyaji, H., et al., 1957	Rats	Albino	M	0.045% in diet for 25 wks	P.O	Tumors[4113]	Killed at wkly. intervals.	25 wks.
	Rats	Albino	M	0.045% in diet for 20 wks	P.O	Tumors[4114]	Killed at wkly. intervals.	20 wks.
	Rats	Albino	M	0.045% in diet for 31 wks	P.O	Tumors[4115]	Killed at wkly. intervals.	31 wks.
Novikoff, A. B., 1957	Rats	Sprague-Dawley.		0.06% in diet for 4 mos	P.O	Tumors[4116]		At least 4 mos.
Odashina, S., and Ishizawa, T., 1957.	64 rats	Albino		600 mg. in diet for 8 mos., 60 mg./d. of glucose.	P.O	Tumors[4117]	All sacrificed at 340 d.	340 d.
	64 rats	Albino		600 mg. in diet for 8 mos., 60 mg./d. of glucuronolactone.	P.O	Tumors[4118]	All sacrificed at 340 d.	340 d.
	64 rats	Albino		600 mg. in diet for 8 mos., 72 mg./d. of sodium glucuronate.	P.O	Tumors[4119]	All sacrificed at 340 d.	340 d.
	64 rats	Albino		600 mg. in diet for 8 mos., vitamin supplemented.	P.O	Tumors[4120]	All sacrificed at 340 d.	340 d.
	128 rats	Albino		600 mg. in diet for 8 mos	P.O	Tumors[4121]	All sacrificed at 340 d.	340 d.
Oka, K., et al., 1957	Rats			0.5 cc. of 1% son. once/wk	Inj	0		Prolonged period.
Ooneda, G., et al., 1957	Rats		M & F	0.1 g. in 10 cc. dist. water & 5 cc. Tween 80 once/wk.	S.C	0		365 d.
Theret, C., 1957	18 rats	Wistar	M	30 mg. daily	P.O	17		
Watanabe, T., 1957	8 rats	Albino			P.O	Tumors[4092]	4 at 6 mos	At least 6 mos.
Asano, B., 1958	Rats		M	0.06% in diet for 150 d., normal diet for additional wks.	P.O	Tumors[4122]	All sacrificed	At least 150 d.
Fijita, K., et al., 1958	15 rats	Mixed		0.02% in diet for 1st mo. 0.04% for 2nd mo., 0.06% thereafter up to 162–183 d., total dose 500–600 g.[4123]	P.O	Tumors[4124]		6 mos.

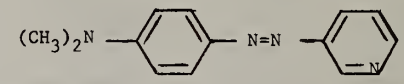
[4092] 4 hepatomas.
[4112] Gross hepatic cirrhosis at end of treatment.
[4113] 48% hepatomas.
[4114] 38% hepatomas.
[4115] 80% hepatomas.
[4116] Hepatic adenocarcinomas with mesenteric metastases. Transplanted through four generations.
[4117] 24 (63%) hepatic carcinomas.
[4118] 20 (50%) hepatic carcinomas.
[4119] 19 (44%) hepatic carcinomas.
[4120] 34 (69%) hepatic carcinomas.
[4121] 49 (72%) hepatic carcinomas.
[4122] Hepatomas. Biochemical Study.
[4123] 1 ml. distilled water injected every 2 days for 6 mos.
[4124] 13 with hepatic carcinomas (some abdominal node and pulmonary metastases).

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
574. p-DIMETHYLAMINOAZOBENZENE (Continued)								
Grant, H. C., and Rees, K. R., 1958.	Rats	Norwegian hooded.	M	600 mg. susp. in 20 ml. alcohol, mixed in 1 kg. food for 6 mos.	P.O	Tumors[4125]		At least 6 mos.
Hadjiolov, A. A., 1958	80 rats (130–150 g. body wt.).	White	M & F	Daily mixed with the food for 5 mos. (0.6 g. in 1000 g. of food).	P.O	Tumors[4126]	Killed at intervals for biochemical studies.	5 mos.
Howell, J. S., 1958	10 rats		5 F & M	0.09% in maize diet plus 2.0% ferric citrate given on Mon., Tues., Wed., Thurs., Sat. & Sun., 0.5% copper acetate in maize diet given on Fri., cont. till tumor formation.	P.O	8[4127]	10 at 6 mos	15 mos.
Howell, J. S., 1958	10 rats		5 F & M	0.09% in maize diet plus 2.0% ferric citrate given on Tues., Thurs., Sat. & Sun., 0.5% copper acetate in cube powder diet given on Mon., Wed. & Fri., cont. till tumor formation.	P.O	5[4128]	9 at 6 mos	18 mos.
	10 rats		5 F & M	0.09% in diet plus 2.0% ferric citrate for life.	P.O	8[4129]	9 at 9 mos	16 mos.
	10 rats		5 F & M	0.09% in maize diet till tumor formation.	P.O	8[4130]	Avg. 8.5 mos	10 mos.
	10 rats		5 F & M	0.09% in maize diet plus 0.5% copper acetate till tumor formation.	P.O	1[4131]	7 at 10 mos	18 mos.
	10 rats		5 F & M	0.09% in maize diet plus 2.0% ferric citrate till tumor formation.	P.O	10[4130]	Avg. 8.5 mos	12 mos.
	10 rats		5 F & M	0.09% in maize diet plus 2.0% ferric citrate given on Tues., Thurs., Sat. & Sun., 0.5% copper acetate in maize diet given on Mon., Wed., & Fri., cont. till tumor formation.	P.O	3[4132]	5 at 16 mos	19 mos.
	10 rats		5 F & M	0.09% in maize diet plus 2.0% ferric citrate given on Tues., Wed., Thurs., Sat. & Sun., 0.5% copper acetate in maize diet given on Mon. & Fri., cont. till tumor formation.	P.O	6[4133]	8 at 6 mos	15 mos.
	10 rats		5 F & M	0.09% in maize diet plus 2.0% ferric citrate for life.	P.O	8[4134]	9 at 6 mos	16 mos.
	10 rats		5 F & M	0.09% in diet plus 2.0% ferric citrate & 0.5% copper acetate for life.	P.O	4[4135]	5 at 11 mos	16 mos.

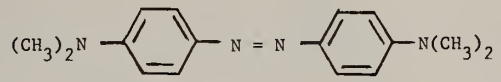
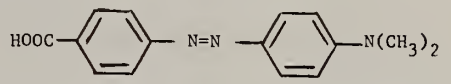
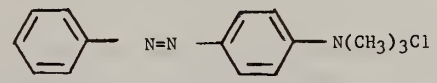
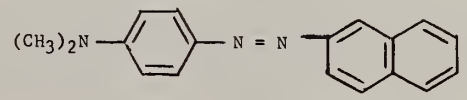
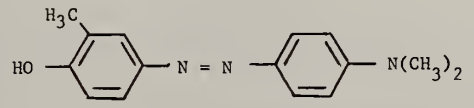
[4125] Cholangiocarcinomas and hepatomas.
[4126] Hepatomas and cholangiomas.
[4127] Hepatomas at 0.9 mos. (avg. 12.0 mos.), 1 with hepatic cirrhosis.
[4128] Hepatoma at 15 mos. (avg. 16.2 mos.).
[4129] Hepatomas at avg. 13.6 mos. 100% hepatic cirrhosis.
[4130] Hepatomas at 6 mos. (avg. 8.5 mos.).
[4131] Hepatomas at 18 mos. (some hepatic cirrhosis).
[4132] Hepatomas at 15 mos., 5 with hepatic cirrhosis.
[4133] Hepatomas at 9 mos. (avg. 11.3 mos.). 2 with hepatic cirrhosis.
[4134] Hepatomas at 11.25 mos. avg. 100% with hepatic cirrhosis.
[4135] Hepatomas at 14.0 mos. avg.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
574. p-DIMETHYLAMINOAZOBENZENE (Continued)								
	10 rats		5 F & M	0.09% in maize diet plus 2.0% ferric citrate & 0.5% copper acetate for life.	P.O	0	8 at 6 mos	16 mos.
Hurst, L., et al., 1958	Rats	Sprague		6 mg. daily in food	P.O	Tumors[4136]		
Kishi, S., et al., 1958	Rats	Albino mixed	M	0.06% in diet for 150 d., normal diet for 30 d.	P.O	Tumors[4122]	All sacrificed	180 d.
Leathem, J. H., and Harding, H. R., 1958.	Mice	Swiss	M & F	0.06 & 0.1% in diet for 6 mos	P.O	Tumors[4137]	30% morality—M 85% mortality—F.	6 mos.
	Mice	C3H	M & F	0.06% in diet for 6 mos	P.O	Tumors[4138]		6 mos.
Paget, G. E., et al., 1958	Rats	Slonaker, inbred	M & F	0.06% in rice diet for duration of experiment.	P.O	Tumors[4139, 4140].	Killed at intervals	At least 294 d.
Sato, T., 1958	Rats		M	0.06% in diet for 150 d., normal diet for additional wks.	P.O	Tumors[4122]	All sacrificed	At least 150 d.
Sorof, S., et al., 1958	Rats	Lankenau-Carworth-Wistar.	M & F	0.06% in diet for 4½ & 11 wks	P.O	([4054])		At least 11 wks.
Spain, J. D., and Clayton, C. C., 1958.	18 rats[4141]	Holtzman	M	0.06% in diet for 16 wks	P.O	Tumors[4142]	11 at 24 wks	24 wks.
	30 rats	Holtzman	M	0.06% in diet 20 wks	P.O	Tumors[4143]	17 at 28 wks	28 wks.
	16 rats	Holtzman	M	0.06% in diet 16 wks	P.O	Tumors[4144]	15 at 24 wks	24 wks.
Steiner, H. A., 1958	17 rats[4145]		M	8/10 mg./d. in the diet	P.O	0	2–49 d., killed at intervals.	49 d.
Takashi, M., and Iwase, S., 1958.	Rats[4146]	Albino mixed		0.06% in basal rice diet for 5 mos., total 530–630 mg.	P.O	Tumors[4147]		150 d.
	Rats	Mixed albino		0.06% in basal rice diet for 5 mos., total 530–630 mg.	P.O	Tumors[4148]		150 d.
von Haam, E., et al., 1958	24 rats & mice.	Harlan rats, Swiss albino mice.		0.06% in rice diet ad. lib	P.O	Tumors[4149]		At least 15 mos.
Ashikawa, K., 1959	Rats	Albino	M	0.06% in diet for 150 d., normal diet for 30 additional d.	P.O	Tumors[3933]	Sacrificed at 180 d.	180 d.
Daoust, R., and Cantero, A., 1959.	36 rats	Wistar albino	M	0.06% in semi-synthetic diet up to 180 d.	P.O	Tumors[4150]	Sacrificed 6 every 30 d.	180 d.

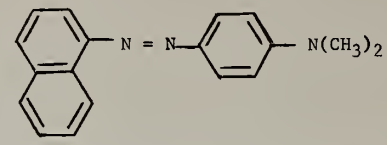
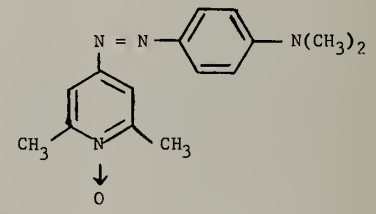
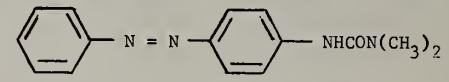
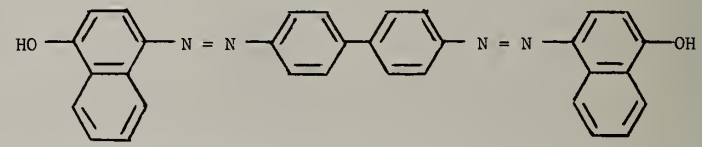
[3933] Hepatomas, Biochemical Study.
[4054] Biochemical Study.
[4122] Hepatomas. Biochemical Study.
[4136] Hepatomas and hepatocellular carcinomas.
[4137] Hepatomas in higher dose group.
[4138] 75% females with hepatomas; 15% males with hepatomas.
[4139] Hepatic, 1 cholangioma at 139 days.
[4140] Hepatoma transplants into weanling rats contained osteoid tissue and cartilagenous nodules. Absent in parent tumors.
[4141] Splenectomized 1 wk. before feeding.
[4142] 55% hepatomas.
[4143] 53% hepatomas.
[4144] 60% hepatomas.
[4145] Subtotal hepatectomy.
[4146] Splenectomized.
[4147] 23.5% with hepatic carcinoma (some metastases).
[4148] 76.0% with hepatic carcinomas (26.3% metastases).
[4149] 58% with hepatomas, first at 6 mos.
[4150] Hepatomas and cholangiomas at 90–180 days.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
574. p-DIMETHYLAMINOZAOBENZENE (Continued)								
Doi, G., 1959	Rats			0.6 g. in 20 ml. olive oil mixed in 1 kg. rice, fed for 90 & 150 d.	P.O	Tumors[4151]	Killed at 90 & 150 d.	150 d.
Emmelot, P., et al., 1959	250 rats	R-Amsterdam	F	10 mg. in 0.2 ml. rape oil 5 d./wk	P.O	Tumors[4152]		At least 12 mos.
Maltoni, C., and Prodi, G., 1959.	67 rats			0.06% in diet for life	P.O	Tumors[4153]	Killed at intervals between 17–272 d.	272 d.
Odashima, S., 1959	31 rats	Albino	M & F	0.06% in diet for 4 mos., basal diet thereafter.	P.O	Tumors[4154]	12 sacrificed at 4 mos., 13 died before 4 mos.	420 d.
	47 rats	Albino	M & F	0.06% in diet for 5 mos., basal diet thereafter.	P.O	Tumors[4155]	17 sacrificed at 5 mos., 21 died before 5 mos.	420 d.
	29 rats	Albino	M & F	0.06% in diet for 1 mo., basal diet thereafter.	P.O	0	11 sacrificed at 1 mo., 8 died by 210 d.	420 d.
Odashima, S., 1959	23 rats	Albino	M & F	0.06% in diet for 2 mos., basal diet thereafter.	P.O	0	10 sacrificed at 2 mos., 8 died before 2 mos.	420 d.
	33 rats	Albino	M & F	0.06% in diet for 3 mos., basal diet thereafter.	P.O	0	16 sacrificed at 3 mos., 11 died before 5 mos.	420 d.
Sato, T., 1959	Rats	Albino	M	0.06% in diet for 120 d., basal diet for 50–60 d. thereafter.	P.O	Tumors[3933]	Sacrificed at 180 d.	180 d.
Tanaka, T., 1959	50 rats	Buffalo	M	0.06% in diet daily for 210 d	P.O	Tumors[4156]		14 mos.
Matsumoto, K., et al., 1960	30 rats	Wistar albino	M	0.04% dissolved in olive oil in diet	P.O	Tumors[4157]	22 at 150 d., killed	150 d.
	30 rats	Wistar	M	0.04% in diet dissolved in olive oil	P.O	Tumors[4158]	22 survived 150 d	150 d.
575. 3′-(4-DIMETHYLAMINOPHENYL)-AZOPYRIDINE 								
Sugiura, K., et al., 1954	15 rats	Sherman	M	0.06% with diet for 199–250 d	P.O	Tumors[4159]	7 at 250 d	250 d.

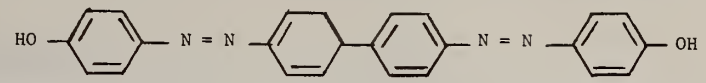
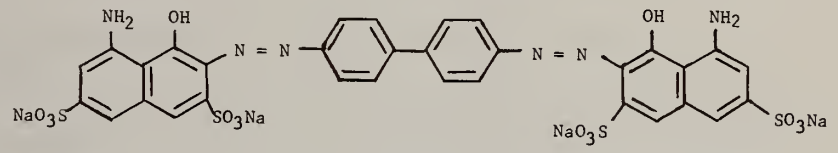
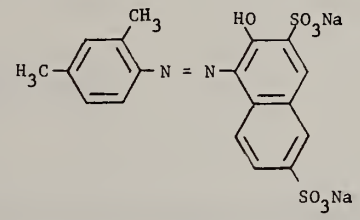
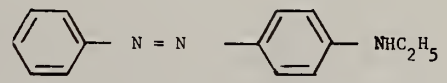
[3933] Hepatomas. Biochemical Study.
[4151] Hepatomas at 150 days.
[4152] Hepatomas at 4–12 mos.
[4153] 27 tumor bearers: 21 with hepatoma, 12 with cholangioma, 4 with adenoma, 2 with carcinoma, 3 with adenocarcinoma at 144–272 days.
[4154] 3 hepatic adenomas at 390–420 days. 4 hepatic carcinomas at 8–13 mos.
[4155] 6 hepatic adenomas at 8–14 mos. 10 hepatic carcinomas at 8–11 mos.
[4156] 32 with hepatomas at 9–14 mos. One transplant developed ascitic form.
[4157] 15 (68.2%) with hepatic carcinoma at 150 days.
[4158] 15 with hepatic carcinoma.
[4159] 8 with hepatomas and cholangiomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
576. 4,4′-DI(DIMETHYLAMINO)AZOBENZENE (SEE ALSO COMPOUND 554) 								
Badger, G. M., et al., 1954	10 rats	Wistar hooded		0.06% in diet for 6 mos	P.O	0	8 at 6 mos	6 mos.
577. 4-DIMETHYLAMINOAZOBENZENE-4′-CARBOXYLIC ACID 								
Crabtree, H. G., 1955	16 rats	Glaxo		0.06% in diet	P.O	0		Up to 600 d.
578. 4-DIMETHYLAMINOAZOBENZENE METHOCHLORIDE 								
Miller, J. A., et al., 1957	16 adult rats	Albino, Holtzman.	M	2.67 mM/kg. of diet for 8 mos	P.O	0	14 alive after 8 mos.	11 mos.
579. p-DIMETHYLAMINOPHENYLAZO-2-NAPHTHALENE 								
Reid, E., and O'Neal, M. A., 1956.	Rats	Albino or August.	M	0.075% in 20% protein diet for 9 mos.	P.O	Tumors[4160]	Killed from 10–12 mos.	12 mos.
580. N,N-DIMETHYL-3¹-METHYL-4¹-HYDROXY-P-AMINOAZOBENZENE 								
Sugiura, K., et al., 1954	15 rats	Sherman	M	0.068% in the diet 107–250 d	P.O	0	7 at 250 d	250 d.

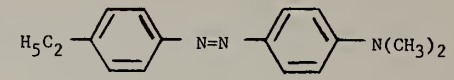
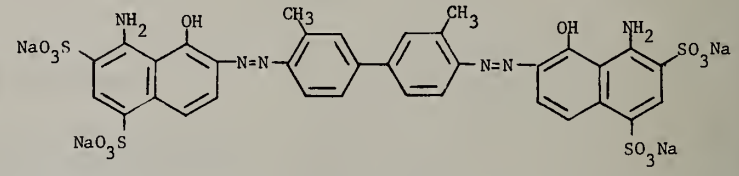
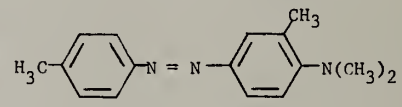
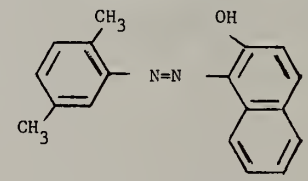
[4160] Hepatomas and cholangiomas. Biochemical Study.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
581. N,N-DIMETHYL-p-(1-NAPHTHYLAZO)-ANILINE 								
Mulay and O'Gara, 1957	10 rats[4161]	Obsorn-Mendel.	F	0.5 ml. of a 2.5% soln. in corn oil, wkly. for 1 yr.	S.C	6[4162]		20 mos.
	10 rats	Osborn-Mendel.	M	0.5 ml. of a 2.5% soln. in corn oil, wkly. for 1 yr.	S.C	0		20 mos.
582. 2,6-DIMETHYLPYRIDINE-1-OXIDE-4-AZO-p-DIMETHYLANILINE 								
Brown, E. V., et al., 1954B	10 rats	Sprague-Dawley.	M	0.02% in the diet for 1 mo. then 0.03% in the diet up to 6 mos.	P.O	Tumors[4163]	Sacrificed at intervals.	6 mos.
583. p-N,N-DIMETHYLUREIDOAZOBENZENE 								
Walpole, A. L., et al., 1954	12 rats	Albino	6 ää	Total of 260 mg./100 g. in total of 5.2 ml./100 g. arachis oil[4164] twice wkly. for 83 dosing d.	S.C. r. flank	0[4165,4166]	5 died from 25–692 d.	692 d.
584. DIPHENYL-4,4'-BIS-[(AZO 4)-NAPHTHOL-(1)] 								
Oka, K., et al., 1957	Rats			0.5 cc. of 1% soln. once/wk	Inj	0		Prolonged period.
Ooneda, G., et al., 1957	Rats		M & F	0.5 cc.[4167] of 1% soln. in weak NaOH soln. once/wk.	S.C	0		365 d.

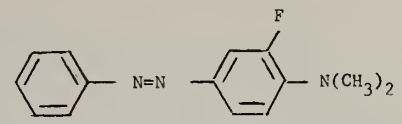
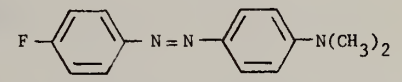
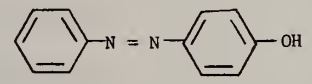
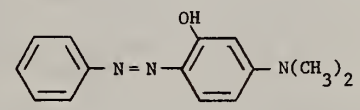
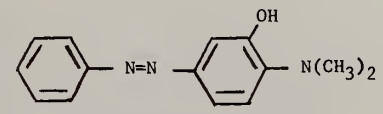
[4161] Age: approx. 3 mos.
[4162] 5 injection site S.C. fibrosarcomas (4 multiple) at 2 wks. 1 injection site carcinoma, (probably mammary) at 10 wks.
[4163] 3 hepatomas. All others with hepatic cirrhosis.
[4164] Sterilized (140° C for 1 hr.).
[4165] 2 males with cholangeal cystadenomatas. Females with 1 leukemia, 1 intra-abdominal carcinomatosis, 1 hepatoma, 1 mammary fibroadenoma, 1 pulmonary tumor.
[4166] 19 arachis oil controls with 1 injection site sarcoma, 4 other site tumors, 1 injection site fibroma.
[4167] Called "Benzidine-α-naphthol".

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
585. DIPHENYL-4,4′-BIS-[(AZO 4)-PHENOL] 								
Oka, K., et al., 1957	Rats			0.5 cc. of 1% soln. once/wk	Inj	0		Prolonged period.
Ooneda, G., et al., 1957	Rats		M & F	0.5 cc.[4168] of 1% soln. in dist. water once/wk.	S.C	0		365 d.
586. DIRECT BLUE BB[4169] 								
Fujita, K., et al., 1957	20 rats		6 M & 14 F	1 ml. of 1% soln. (10 mg.) dissolved in cold sterile dist. water wkly. or biwkly., total 200 mg.	S.C	Tumors[4170]	5 at 248 d	270 d.
587. EDICOL PONCEAU RS[4171] 								
Bonser, et al., 1956	15 mice	Stock Albino	F	0.05% in drinking water for 52 wks. (Total dose per mouse, 884 mg.)	P.O	Tumors[4172]	5 alive at 20 wks	70–89 wks.
	15 mice	Stock Albino	M	0.05% in drinking water for 25 wks. (Total dose per mouse, 884 mg.)	P.O	Tumors[4173]	8 alive at 20 wks	70–89 wks.
588. N-ETHYL-p-AMINOAZOBENZENE 								
Sugiura, K., et al., 1954	15 rats	Sherman	M	0.06% in the diet for 148 to 250 d	P.O	0	12 at 250 d	250 d.

[4168] Called "Benzidine-phenol."
[4169] Synthesized: 90.4% pure. Major impurity: NaCl.
[4170] 2 injection site fibrosarcomas.
[4171] Loncean 2R.
[4172] 1 lymphoma. 2 enteric polyps.
[4173] 6 lymphomas, 2 enteric polyps.

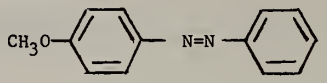
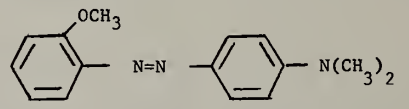
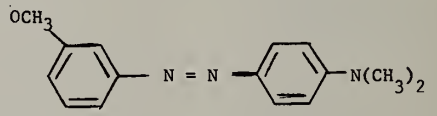
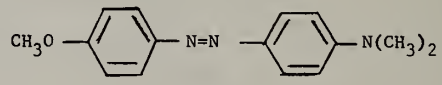
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
				589. 4′-ETHYL-4-DIMETHYLAMINOAZOBENZENE 				
Miller, J. A., et al., 1957	14 adult rats	Albino, Holtzman.	M	Dissolved in corn oil, 2.14 mM/kg. of diet for 3 mos.[4174]	P.O	12 (hepatomas).[4175]	13 alive at end of 3 mos.	4 mos.
				590. EVANS BLUE 				
Ruttner, J. R., and Brunner, H. E., 1956.	40 rats	White		2% aqueous soln. 1 ml. every 2 wks	I.P	0	Animals killed regularly during the experiment.	475 d.
				591. 3,4′-DIMETHYL-4-DIMETHYLAMINOAZOBENZENE 				
Miller, J. A., et al., 1957	12 adult rats	Albino, Holtzman.	M	Dissolved in corn oil, 2.40 mM/kg. of diet for 6 mos.	P.O	2 (hepatomas).	All alive at 7 mos	8 mos.
				592. F.D.&C. RED NO. 32 ISOMER[4176] 				
Unpublished data from A. A. Nelson of F.D.A.	2 dogs			5 mg./kg./d. for 72–73 mos	P.O	0		43 mos.

[4174] Fed at 2.67 mM/kg. of diet for first 6 wks., then at above level until termination.
[4175] Hepatic cirrhosis at termination of treatment.
[4176] Prepared from p-xylidine.

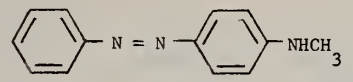
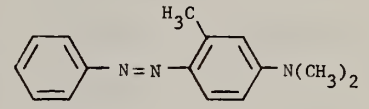
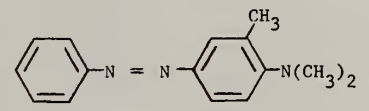
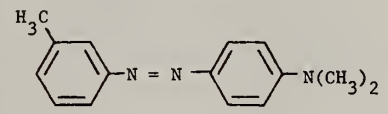
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
593. 3-FLUORO-4-DIMETHYLAMINOAZOBENZENE 								
Miller, J. A., et al., 1957	13 adult rats	Albino, Holtzman.	M	Dissolved in corn oil, 2.40 mM/kg. of diet for 5 mos.	P.O	10 (hepatomas).[4107]	All alive at 6 mos	7 mos.
594. 4'-FLUORO-4-DIMETHYLAMINOAZOBENZENE 								
Miller, E. C., et al., 1958	16 rats	Albino		0.059% in diet for 3 wks., off 4 d., then 0.053% for 10 wks.	P.O	Tumors[4177]	15 at 3 mos	5 mos.
595. 4-HYDROXYAZOBENZENE 								
Corre-Hurst, L., et al., 1953	10 rats		M	0.6 g./kg. food (ca. 6 mg. daily of azo dye).	P.O	0		324 d.
596. 2-HYDROXY-4-DIMETHYLAMINOAZOBENZENE 								
Schmahl, D., 1954	56 rabbits	BDI & BDIII	M & F	5 mg. daily, then 10 mg. daily until total dose of 2.5 g. per rat.	P.O	0		8 mos.
597. 3-HYDROXY-4-DIMETHYLAMINOAZOBENZENE 								
Miller, J. A., et al., 1957	6 adult rats	Albino, Holtzman.	M	Dissolved in corn oil, 2.67 mM/kg. of diet for 8 mos.	P.O	0	All alive after 8 mos.	11 mos.

[4107] Gross hepatic cirrhosis at end of treatment.

[4177] 15 with hepatomas at 5 mos.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
598. 4-METHOXYAZOBENZENE 								
Badger, G. M., et al., 1954	10 rats	Wistar hooded		0.06% in diet for 6 mos	P.O	0	7 at 6 mos	6 mos.
599. 2′-METHOXY-4-DIMETHYLAMINOAZOBENZENE 								
Miller, J. A., et al., 1957	16 adult rats	Albino, Holtzman.	M	Dissolved in corn oil, 2.40 mM/kg. of diet for 6 mos.[4105]	P.O	8 (hepatomas)[4107]	All alive at end of 6 mos.	8 mos.
600. 3′-METHOXY-4-DIMETHYLAMINOAZOBENZENE 								
Miller, J. A., et al., 1957	16 adult rats	Albino, Holtzman.	M	Dissolved in corn oil, 2.00 mM/kg. of diet for 3 mos.	P.O	16 (hepatomas)[4108]	All alive at end of of 3 mos.	6 mos.
	16 adult rats	Albino, Holtzman.	M	Dissolved in corn oil, 2.40 mM/kg. of diet for 3 mos.[4105]	P.O	9 (hepatomas)[4111]	9 alive at end of 3 mos.	4 mos.
601. 4′-METHOXY-4-DIMETHYLAMINOAZOBENZENE 								
Badger, G. M., et al., 1954	10 rats	Wistar hooded		0.06% in diet for 6 mos	P.O	Tumors	100%	6 mos.
Miller, J. A., et al., 1957	16 adult rats	Albino, Holtzman.	M	Dissolved in corn oil, 2.40 mM/kg. of diet for 6 mos.[4105]	P.O	12 (hepatomas)[4107]	All alive at end of 6 mos.	8 mos.

[4105] 2.67 mM/kg. of diet, for first 2 wks.; dye-free diet for 9 days, returned above level for duration.
[4107] Gross hepatic cirrhosis at end of treatment.
[4108] Gross hepatic cirrhosis at end of treatment.
[4111] Gross hepatic cirrhosis at end of treatment.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
602. N-METHYL-p-AMINOAZOBENZENE 								
Sugiura, K., et al., 1954	14 rats	Sherman	M	0.056% in the diet for 132–250 d	P.O	Tumors[4178]		250 d.
603. 2-METHYL-4-DIMETHYLAMINOAZOBENZENE 								
Sorof, S., et al., 1958	Rats	Lankenau-Carworth-Wistar.	M & F	0.058% in diet for 4½ & 11 wks	P.O	([364])		At least 11 wks.
604. 3-METHYL-4-DIMETHYLAMINOAZOBENZENE 								
Richardson, H. L., et al., 1954	Rats[4179]	Sprague-Dawley.	M	Unspecified amt. in semi-synthetic diet.	P.O	0		
605. 3′-METHYL-4-DIMETHYLAMINOAZOBENZENE 								
Corre-Hurst, L., et al., 1953	9 rats		M	0.6 g./kg. food (ca. 6 mg. daily of azo dye).	P.O	Tumors[4180]		293 d.
Graffi, A., et al., 1953	90 mice		M	3 drops 3% in acetone 3 times wkly. followed by 1 drop 5% croton oil in mineral oil once wkly.	Skin	0	8 at 12 mo	12 mos.
Brown, E. V., et al., 1954A	5 rats	Sprague-Dawley.	M	0.06% in the diet throughout experiment with short intervals on normal diet.	P.O	Tumors[4181]	4 at 4 mos	4 mos.
Brown, E. V., et al., 1954B	10 rats	Sprague-Dawley.	M	0.06% in the diet for 113 d. with occasional intervals on normal diet (total of 17 d.).	P.O	0[4182]	100%	4 mos.

[364] Biochemical study.
[4178] 13 with cholangiomas or hepatomas. (5 with metastases).
[4179] Hypophysectomized.
[4180] Malignant tumors.
[4181] 3 with hepatomas, 1 with nodules.
[4182] 5 with hepatic necrosis.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
605. 3′-METHYL-4-DIMETHYLAMINOAZOBENZENE (Continued)								
Fish, W. A., et al., 1954	12 rats	Wistar	M	0.06% in the diet	P.O	Tumors[4183]		180 d.
Kandutsch and Baumann, 1954.	Rats			0.06% in the diet	P.O	Tumors[3998]		4 mos.
Robertson, C. H., et al., 1954A.	4 rats	Sprague-Dawley.	M	0.06% in the diet	P.O	Tumors[4184]	2 sacrificed at 6 & 10 wks.	10 wks.
	6 rats	Sprague-Dawley.	M & F	0.06% in the diet	P.O	Tumors[4185]	2 sacrificed at 5, 11, 16 wks.	16 wks.
	6 rats	Sprague-Dawley.	M	0.06% in the diet	P.O	Tumors[4008]	Sacrificed 6, 12 & 18 wks.	18 wks.
	Rats[4179]	Sprague-Dawley.	F	0.06% in the diet	P.O	0	Sacrificed at intervals.	22 wks.
Griffin, A. Clark, et al., 1955	6 rats[4179]	Sprague-Dawley.		0.06% in semi-synthetic diet for 14–21 wks.[4186]	P.O	0		21 wks.
	15 rats[4179]	Sprague-Dawley.		0.06% in semi-synthetic diet for 14–21 wks.[4187]	P.O	0		21 wks.
	3 rats[4179]	Sprague-Dawley.		0.06% in semi-synthetic diet for 28 wks.	P.O	0		28 wks.
Griffin, A. Clark. et al., 1955	15 rats[4179]	Sprague-Dawley.		0.06% in semi-synthetic diet for 21 wks.[4187]	P.O	0		21 wks.
	11 rats[4179]	Sprague-Dawley.		0.06% in semi-synthetic diet for 14–21 wks.[4188]	P.O	0[4189]		21 wks.
	9 rats[4179]	Sprague-Dawley.		0.06% in semi-synthetic diet for 14–21 wks.[4190]	P.O	0		21 wks.
Rumsfeld and Baumann, 1955	Rats		M	.040–.064% carcinogen in diet for 8–12 wks.	P.O	Hepatomas		
Ward and Griffin, 1955	Rats	Albino	M	0.06% 3′-Me-DAB in diet for 6–8 wks.	P.O	Liver tumors.		
Burke and Miller, 1956	Adult rats	Wistar	M	600 mg./kg. of diet for 2–3 mos	P.O	0[4191]		2–3 mos.
Farber, E., 1956	10 rats	Wistar	M & F	Incorporated into diet at level of 0.06%.	P.O	0[4192]	Sacrificed at wkly. intervals beginning at 7 d.	49 d.
Jedeikin, L., et al., 1956	Rats	Carworth Farms.		0.06% of diet	P.O	Liver tumors[4193].	Killed at intervals	At least 155 d.

[3998] Hepatomas.
[4008] Hepatic.
[4179] Hypophysectomized.
[4183] Hepatomas and cholangiomas.
[4184] Cholangeal adenocarcinomas.
[4185] Cholangeal adenomas, hepatic adenocarcinomas.
[4186] Simultaneous cortisone injection daily or every other day.
[4187] Simultaneous daily injections of saline.
[4188] Simultaneous desoxycorticosterone acetate injection daily or every other day.
[4189] 3 with hepatic cirrhosis.
[4190] Simultaneous testosterone injection daily or every other day.
[4191] Study of precancerous lesions. No hepatomas but cholangeal hyperplasia and early cholangioma present.
[4192] Treatment period insufficient for tumor induction. Study of early hepatic lesions.
[4193] Cholangiocarcinomas and hepatomas. Hepatic carcinomatous lesions in animals treated 66+ days.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
605. 3′-METHYL-4-DIMETHYLAMINOAZOBENZENE (Continued)								
Reid, E., and O'Neal, M. A., 1956.	Rats	Albino	M	0.06% in semi-synthetic diet for 12–14 wks.	P.O	Tumors[4194]	Some killed at 4, 16 & 18 wks.	18 wks.
Eversole, W. J., 1957	12 rats	Long-Evans	M	0.058% in semi-synthetic diet for 126 d.	P.O	Tumors[4195]	100%	126 d.
	12 rats	Long-Evans	M	0.058% in semi-synthetic diet for 126 d.	P.O	Tumors[3979]	100%	126 d.
King, H. J., et al., 1957	15 rats	Holtzman	M	0.064% in diet containing 300 ppm. copper for 4 wks., low copper level diet for 4 wks., 0.064% dye diet with 300 ppm. copper for 4 wks., high copper level basal diet for 8 wks.	P.O	0	12 at 16 wks	16 wks.
	15 rats	Holtzman	M	0.064% in diet containing 300 ppm. copper for 4 wks., high copper level diet for 4 wks., 0.064% dye diet with 300 ppm. copper for 4 wks., high copper level basal diet for 8 wks.	P.O	Tumors[4196]	13 at 16 wks	16 wks.
	15 rats	Holtzman	M	0.064% in diet containing 1 ppm. copper for 4 wks., high copper level basal diet for 4 wks., 0.064% dye diet with 1 ppm. copper for 4 wks., low copper level basal diet for 8 wks.	P.O	Tumors[4197]	14 at 16 wks	16 wks.
	15 rats	Holtzman	M	0.064% in diet containing 300 ppm. copper for 8 wks., high copper level basal diet for 8 wks.	P.O	Tumors[4198]	14 at 16 wks	16 wks.
	30 rats	Holtzman	M	0.064% in diet containing 1 ppm. copper for 8 wks., high & low copper level basal diet for next 8 wks.	P.O	Tumors[4199]	23 at 16 wks	16 wks.
	15 rats	Holtzman	M	0.064% in diet containing 1 ppm. copper for 4 wks., low copper level basal diet for 4 wks., 0.064% dye diet with 1 ppm. copper for 4 wks., low copper level basal diet for 8 wks.	P.O	Tumors[4200]	11 at 16 wks	16 wks.
	15 rats	Holtzman	M	0.064% in diet containing 1 ppm. copper for 8 wks., low copper level basal diet for next 8 wks.	P.O	Tumors[4201]	13 at 16 wks	
	15 rats	Holtzman	M	0.064% in diet containing 300 ppm. copper for 8 wks., low copper level base diet for next 8 wks.	P.O	Tumors[4202]	13 at 16 wks	16 wks.

[3979] Hepatomas.
[4194] Hepatomas and cholangiomas.
[4195] Hepatic, 100% with neoplastic nodules.
[4196] 15% hepatomas.
[4197] 29% hepatomas.
[4198] 7% hepatomas.
[4199] 83% hepatomas.
[4200] 36% hepatomas.
[4201] 77% hepatomas.
[4202] 23% hepatomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
605. 3′-METHYL-4-DIMETHYLAMINOAZOBENZENE (Continued)								
	15 rats	Holtzman	M	0.064% in diet containing 300 ppm. copper for 8 wks., high copper level basal diet for next 8 wks.	P.O.	Tumors[4203]	11 at 16 wks	16 wks.
Miller, J. A., et al., 1957	16 adult rats	Albino, Holtzman.	M	Dissolved in corn oil, 2.00 mM/kg. of diet for 3 mos.	P.O.	16 (hepatomas)[4106].	All alive at end of 3 mos.	6 mos.
	11 adult rats	Albino, Holtzman.	M	Dissolved in corn oil, 2.40 mM/kg. of diet for 8 mos.	P.O.	2 (benign hepatomas).	All alive at 9 mos.	11 mos.
Spain, J. P., and Griffin, A. C., 1957.	42 rats	Holtzman & Sprague-Dawley albino.	M	0.06% in purified diet up to 90 d	P.O.	Tumors[4204]	Killed at 2, 4, 8, 16, 29, 38, 46, 63 & 90 d. intervals.	90 d.
	25 rats	Holtzman & Sprague-Dawley albino.	M	0.06% in purified diet up to 38 d	P.O.	Tumors[4204]	Killed at 6, 14, 22, 30 & 38 d. intervals.	38 d.
Clayton, C. C., and Abbott, L. D., 1958.	15 rats	Holtzman	M	0.064% in diet for 8 wks., basal diet for 8 wks.	P.O.	Tumors[4206]	15 at 16 wks	16 wks.
	15 rats	Holtzman	M	0.064% in diet for 8 wks., basal diet for 8 wks.	P.O.	Tumors[4206]	14 at 16 wks	16 wks.
	15 rats	Holtzman	M	0.064% in diet for 4 wks., off 4 wks., on 4 wks., off 8 wks.	P.O.	Tumors[4207]	13 at 20 wks	20 wks.
	15 rats	Holtzman	M	0.064% in diet for 8 wks., basal diet for 8 wks.	P.O.	Tumors[4208]	11 at 16 wks	16 wks.
	15 rats	Holtzman	M	0.064% in diet for 8 wks., basal diet for 8 wks.	P.O.	Tumors[4209]	12 at 16 wks	16 wks.
	15 rats	Holtzman	M	0.064% in diet for 8 wks., basal diet for 8 wks.	P.O.	Tumors[4210]	14 at 16 wks	16 wks.
	15 rats	Holtzman	M	0.064% in diet for 8 wks., basal diet for 8 wks.	P.O.	Tumors[4208]	9 at 16 wks	16 wks.
Clayton, C. C., and Abbott, L. D., 1958.	15 rats	Holtzman	M	0.064% in diet for 8 wks., basal diet for 8 wks.	P.O.	Tumors[4211]	9 at 16 wks	16 wks.
Eversole, W. J., 1958	36 rats	Long-Evans	M	0.058% in semi-synthetic diet for 4 mos.	P.O.	Tumors[4212]		4 mos.
Fiala, S., 1958	Rats	Sprague-Dawley.			P.O.			290 d.
Hoffman, H. E., and Griffin, A. C., 1958.	30 rats	Albino	M	0.06% in synthetic diet for 14 wks	P.O.	Tumors[4213]		14 wks. or more.

[4106] Gross hepatic cirrhosis at end of treatment.
[4203] 9% hepatomas.
[4204] Hepatic.
[4205] 87% hepatomas.
[4206] 57% hepatomas.
[4207] 92% hepatomas.
[4208] 100% hepatomas.
[4209] 75% hepatomas.
[4210] 86% hepatomas.
[4211] 89% hepatomas.
[4212] 31 (86.1%) with hepatic adenocarcinoma.
[4213] 16/27 with hepatomas.

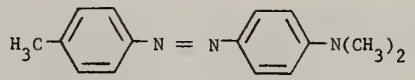
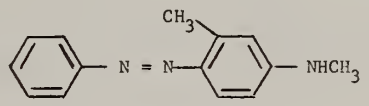
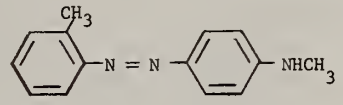
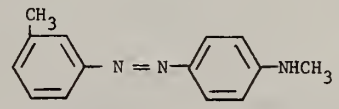
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
605. 3′-METHYL-4-DIMETHYLAMINOAZOBENZENE (Continued)								
Miller, E. C., et al., 1958	16 rats	Albino		0.054% in diet for 3 mos	P.O	Tumors[4214]		5 mos.
	17 rats	Albino		0.027% in diet for 3 mos	P.O	Tumors[4216]		5 mos.
	16 rats	Albino		0.054% in diet for 3 mos	P.O	Tumors[4216]		5 mos.
	14 rats	Albino		0.054% in diet for 3 mos	P.O	Tumors[4217]		5 mos.
	14 rats	Albino		0.054% in diet for 3 mos	P.O	Tumors[4218]		5 mos.
	16 rats	Albino		0.054% in diet for 3 mos	P.O	Tumors[4217]		5 mos.
Spain, J. D., and Clayton, C. C., 1958.	30 rats	Holtzman	M	0.064% in diet for 8 wks	P.O	Tumors[4219]	16 at 16 wks	16 wks.
Burke, W. T., and Miller, L. L., 1959.	Rats	Wistar or Sprague-Dawley.	M	0.06% in diet for 2–3 mos	P.O	0[4220]		At least 3 mos.
	Rats	Rochester, Sprague-Dawley, Carworth Farms.	M	0.06% in diet for 2–3 mos	P.O	0[4221]		3 mos.
Chan, S. K., et al., 1959	Rats	Holtzman	F	0.06% in diet up to 90 d	P.O	Tumors[3933]	Sacrificed at 30 d. intervals up to 90 d., thereafter, killed after tumor detection.	
Kizer, D. E., and McCoy, T. A., 1959.	75 rats	Holtzman	F	0.06% in diet	P.O	Tumors[3933]	5 killed at 30 d. intervals up to 90 d., thereafter, killed after tumore detection.	150 d.
Richardson, H. L., et al., 1959.	46 rats	Long-Evans	M	0.06% in basal diet for 7, 8, 9 & 14 wks. kept for 4 wks., in same room with Sprague-Dawley rats exposed to carcinogen.	P.O	3[3974]		18 wks.
	115 rats	Long-Evans	F	0.06% in basal diet for 7, 8, 9 & 14 wks. kept for 8 wks. in same room with Sprague-Dawley rats exposed to carcinogen.	P.O	11[3974]		18 wks.
	52 rats	Long-Evans	M	0.06% in basal diet for 7, 8, 9 & 14 wks., kept for 8 wks. in same room with Sprague-Dawley rats exposed to carcinogen.	P.O	7[3974]		18 wks.

[3933] Hepatomas, Biochemical Study.
[3974] Hepatic carcinoma.
[4214] 15 with hepatomas at 5 months.
[4215] 2 with hepatomas at 5 months.
[4216] 16 with hepatomas at 5 months.
[4217] 14 with hepatomas at 5 months.
[4218] 13 with hepatomas at 5 months.
[4219] 87% hepatomas.
[4220] Cholangeal hyperplasia. Precancerous hepatic lesions. Biochemical study.
[4221] Precancerous hepatic lesions. Biochemical study.

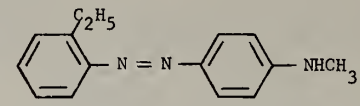
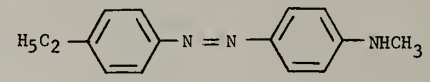
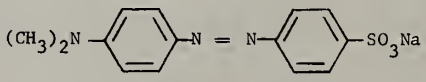
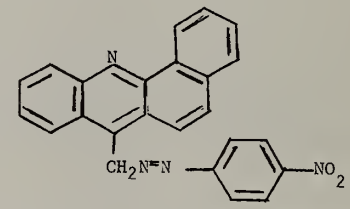
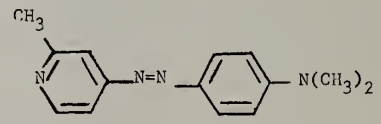
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
605. 3′-METHYL-4-DIMETHYLAMINOAZOBENZENE (Continued)								
	92 rats	Long-Evans	M	0.06% in basal diet for 7, 8, 9 & 14 wks., kept for 11 wks. in same room with Sprague-Dawley rats exposed to carcinogen.	P.O	19[3974]		18 wks.
	85 rats	Long-Evans	M	0.06% in basal diet for 7, 8, 9 & 14 wks., kept for 13 wks. in same room with Sprague-Dawley rats exposed to carcinogen.	P.O	12[3974]		18 wks.
	73 rats	Long-Evans	M	0.06% in basal diet for 7, 8, 9 & 14 wks., kept in room adjacent to Sprague-Dawley rats exposed to carcinogen.	P.O	7[3974]		29 wks.
	43 rats	Long-Evans	M	0.06% in basal diet for 7, 8, 9 & 14 wks., kept in room adjacent to Sprague-Dawley rats exposed to carcinogen.	P.O	2[3974]		18 wks.
	99 rats	Long-Evans	F	0.06% in basal diet for 7, 8, 9 & 14 wks., kept for 2 wks. in same room with Sprague-Dawley rats exposed to carcinogen.	P.O	0		18 wks.
	69 rats	Long-Evans	M	0.06% in basal diet for 7, 8, 9 & 14 wks., kept for 1 wk. in same room with Sprague-Dawley rats exposed to carcinogen.	P.O	3[3974]		18 wks.
	73 rats	Long-Evans	F	0.06% in basal diet for 7, 8, 9 & 14 wks., kept for 1 wk. in same room with Sprague-Dawley rats exposed to carcinogen.	P.O	2[3974]		18 wks.
	439 rats	Long-Evans	193 M, 246 F	0.06% in diet for 7, 8, 9 or 14 wks	P.O	Tumors[4222]	All groups sacrificed at 18 wks.	18 wks.
	94 rats	Long-Evans	F	0.06% in basal diet for 7, 8, 9 & 14 wks.	P.O	2[3974]		18 wks.
	152 rats	Long-Evans	F	0.06% in basal diet for 7, 8, 9 & 14 wks.	P.O	4[3974]		18 wks.
	119 rats	Long-Evans	M	0.06% in basal diet for 7, 8, 9 & 14 wks.	P.O	3[3974]		18 wks.
	74 rats	Long-Evans	M	0.06% in basal diet for 7, 8, 9 & 14 wks.	P.O	0		18 wks.
	34 rats	Sprague-Dawley.	F	0.06% in basal diet for 7, 8, 9 & 14 wks., kept in same room with Long-Evans rats exposed to carcinogen.	P.O	26[3974]		22 wks.
Richardson, H. L., et al., 1959	120 rats	Sprague-Dawley.	M	0.06% in basal diet for 7, 8, 9 & 14 wks., kept in same room with Long-Evans rats exposed to carcinogen.	P.O	43[3947]		18 wks.

[3974] Hepatic carcinoma.

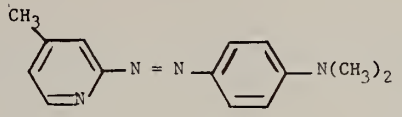
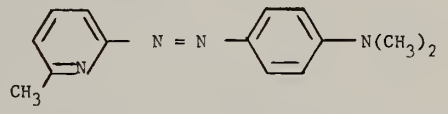
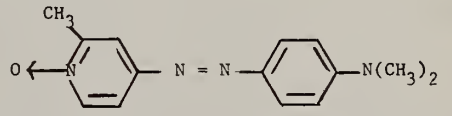
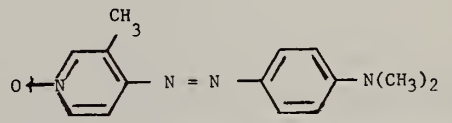
[4222] 3 males, 6 females with hepatic carcinoma.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
605. 3′-METHYL-4-DIMETHYLAMINOAZOBENZENE (Continued)								
Richardson, H. L., et al., 1959	34 rats	Sprague-Dawley.	F	0.06% in basal diet for 7, 8, 9 & 14 wks., kept in same room with Long-Evans rats exposed to carcinogen.	P.O	16[3974]		22 wks.
	128 rats	Sprague-Dawley.	F	0.06% in basal diet for 7, 8, 9 & 14 wks., kept in same room with Long-Evans rats exposed to carcinogen.	P.O	26[3974]		18 wks.
606. 4′-METHYL-4-DIMETHYLAMINOAZOBENZENE 								
Corre-Hurst, L., et al., 1953	8 rats		M	0.6 g./kg. food (ca. 6 mg. daily of azo dye).	P.O	0		184 d.
Sorof, S., et al., 1958	Rats	Lankenau-Carworth-Wistar.	M & F	0.064% in diet for 11 wks	P.O	([4054])		At least 11 wks.
607. N-METHYL-2-METHYL-p-AMINOAZOBENZENE 								
Miller, J. A., et al., 1957	16 adult rats	Albino, Holtzman.	M	Dissolved in corn oil, 2.40 mM/kg. of diet for 8 mos.	P.O	1 (hepatoma).	All alive at 9 mos.	10 mos.
608. N-METHYL-2′-METHYL-p-AMINOAZOBENZENE 								
Sugiura, K., et al., 1954	15 rats	Sherman	M	0.06% in the diet for 90–250 d	P.O	Tumors[4223]		250 d.
609. N-METHYL-3′-METHYL-p-AMINOAZOBENZENE 								
Sugiura, K., et al., 1954	15 rats	Sherman	M	0.06% in the diet for 141–225 d	P.O	Tumors[4224]		225 d.

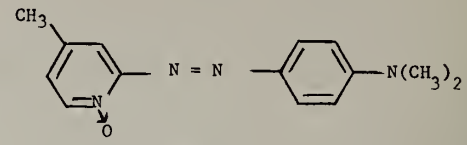
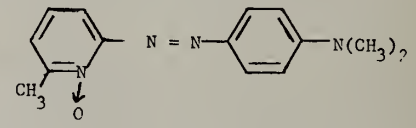
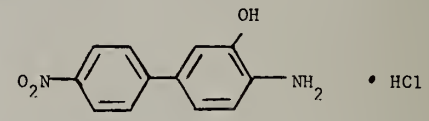
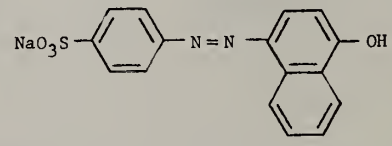
[3974] Hepatic carcinoma.
[4054] Biochemical Study.
[4223] 4 with cholangiomas or hepatomas (1 metastatic).
[4224] 15 with cholangiomas or hepatomas (3 metastatic).

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
				610. N-METHYL-2′-ETHYL-p-AMINOAZOBENZENE 				
Sugiura, K., et al., 1954	15 rats	Sherman	M	0.064% in the diet for 74–250 d	P.O	0	10 at 250 d	250 d.
				611. N-METHYL-4′-ETHYL-p-AMINOAZOBENZENE 				
Sugura, K., et al., 1954	15 rats	Sherman	M	0.064% in the diet 104–223 d	P.O	Tumors[4225]	7 at 188 d	223 d.
	15 rats	Sherman	M	0.06% in the diet for 100–250 d	P.O	Tumors[4226]		250 d.
				612. METHYL ORANGE 				
Tanaka, cited by Maruya[4227]	Rats				S.C	0		
				613. 9-METHYL-w-(p-NITROBENZENEAZO)-3,4-BENZACRIDINE 				
Mashbits, F. D., 1955[4228]	25 mice[4229]	White		5–10 mg. in saline	S.C	Tumors[4230]		At least 23 mos.
				614. 2-METHYLPYRIDINE-4-AZO-p-DIMETHYLANILINE 				
Brown, E. V., et al., 1954B	10 rats	Sprague-Dawley.	M	0.06% in the diet throughout experiment.[4231]	P.O	4[3979]	Sacrificed at intervals.	6 mos.

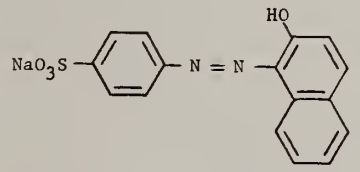
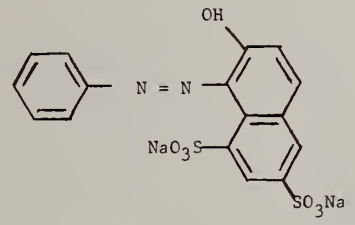
[3979] Hepatomas.
[4225] 15 with cholangiomas or hepatomas (1 metastatic).
[4226] 3 with cholangiomas or hepatomas.
[4227] Recorded in "Toxikologische Daten ... etc.".
[4228] From abstract.
[4229] Age: 3 months or under.
[4230] 3 with papilloadenomas, 2 with myeloid leukemias. No controls.
[4231] Low protein diet.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
615. 4-METHYLPYRIDINE-2-AZO-p-DIMETHYLANILINE 								
Brown, E. V., et al., 1954B	10 rats	Sprague-Dawley.	M	0.06% in the diet throughout diet[4231]	P.O.	0	Sacrificed at intervals.	10 mos.
616. 6-METHYLPYRIDINE-2-AZO-p-DIMETHYLANILINE 								
Brown, E. V., et al., 1954B	10 rats	Sprague-Dawley.	M	0.06% in the diet throughout experiment.[4231]	P.O.	0	Sacrificed at intervals.	10 mos.
617. 2-METHYLPYRIDINE-1-OXIDE-4-AZO-p-DIMETHYLANILINE 								
Brown, E. V., et al., 1954B	10 rats	Sprague-Dawley.	M	0.02% in the diet throughout experiment.	P.O.	0[4232]	All died in 2 mos.	2 mos.
	10 rats	Sprague-Dawley.	M	0.06% in the diet for 113 d. with occasional intervals on normal diet for a total of 17 d.	P.O.	7[4233]	All died at 4 mos.	4 mos.
618. 3-METHYLPYRIDINE-1-OXIDE-4-AZO-p-DIMETHYLANILINE 								
Brown, E. V., et al., 1954B	10 rats	Sprague-Dawley.	M	0.06% in the diet throughout experiment.	P.O.	4[3979]	Sacrificed at intervals.	6 mos.

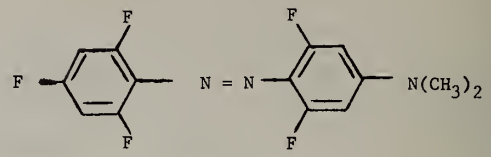
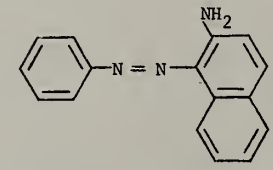
[3979] Hepatomas.
[4231] Low protein diet.
[4232] Hepatic cirrhosis.
[4233] 7 survivors with hepatomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
619. 4-METHYLPYRIDINE-1-OXIDE-2-AZO-p-DIMETHYLANILINE 								
Brown, E. V., et al., 1954B	10 rats	Sprague-Dawley.	M	0.06% in the diet throughout experiment.[4231]	P.O	0	Sacrificed at intervals.	10 mos.
620. 6-METHYLPYRIDINE-1-OXIDE-2-AZO-p-DIMETHYLANILINE 								
Brown, E. V., et al., 1954B	10 rats	Sprague-Dawley.	M	0.06% in the diet throughout the experiment.[4231]	P.O	0	Sacrificed at intervals.	10 mos.
621. 4′-NITRO-4-AMINO-3-HYDROXY-DIPHENYL HYDROCHLORIDE 								
Bonser et al., 1956	20 mice	Albino		Paraffin wax pellet.[4234]	Implantation into lumen of the bladder.	3 (invasive carc. of bladder).	All alive at end of exp.	40 wks.
621. a. ORANGE I[4235] 								
Bourke, A. R., et al., 1956	48 rats		24 āā	1.0 & 0.5% in diet for 2 yrs	P.O	0	Increased mortality at 1%.	2 yrs.
	14 dogs			5 mg./kg./d. in capsule to 1.0% mixed in diet.	P.O	0	3 at 5 yrs	Up to 5 yrs.
	24 rats		12 āā	2.0% in diet up to 5 wks	P.O	0[4236]	All died	5 wks.

[4231] Low protein diet.
[4234] Dose not specified.
[4235] FD&C Orange No. 1.
[4236] No pathology reported.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
621. a. ORANGE I (Continued)								
Hallesy, D., and Doull, J., 1956[4237].	Rats[119]	Sprague-Dawley.	M & F	Aqueous soln	I.P	0		30 d.
	Rats[119]	Sprague-Dawley.	M & F	Aqueous soln	P.O., stomach tube.	0		30 d.
	Rats	Sprague-Dawley.	M	1% in diet for 16 wks	P.O	0	80% mortality	16 wks.
Nelson, A. A., and Davidow, B., 1957.	18 rats	Osborne-Mendel.		2% aqueous soln., 20 mg./wk	Inj	Tumors[4238, 4239].		
Klinke, unpublished data[4227]	85 rats			10–15 mg. daily as 0.1% in food for 400 d.	P.O	0		
622. ORANGE II[4240] 								
Hansen, W. H., et al., 1960	50 rats[4241]	Albino	25 M, 25 F	0.25, 0.5, 1.0, 2.0 & 5.0% in diet for 90 d.	P.O	0		90 d.
623. ORANGE G 								
Klinke, unpublished data[4227]	75 rats			10–15 mg. daily as 0.1% in food for 400 d.	P.O	0		
	10 rats			20–30 mg. daily as 0.2% in food for 245 d.	P.O	0		245 d.

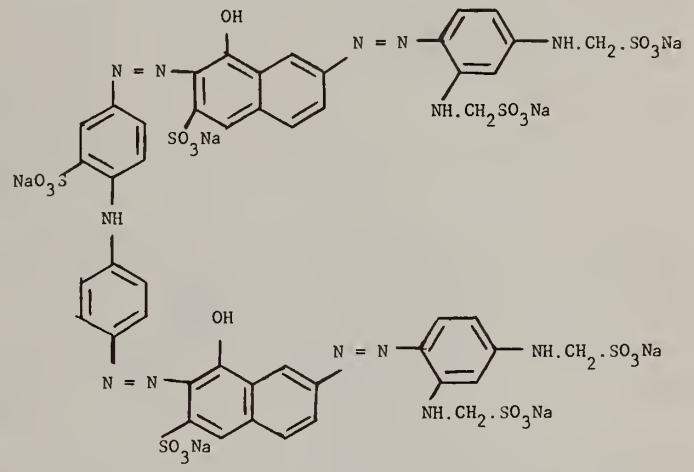
[119] Adult.
[4227] Recorded in "Toxikologische Daten . . . etc.".
[4237] From abstract.
[4238] 6 with injection site fibrosarcomas.
[4239] Saline controls negative.
[4240] FD&C Orange No. 4.
[4241] 10/group.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
624. 2,6,2′,4′,6′-PENTAFLUORO-4-DIMETHYLAMINOAZOBENZENE 								
Miller, J. A., et al., 1957	6 adult rats	Albino, Holtzman.	M	Dissolved in corn oil, 2.40 mM/kg. of diet for 4 mos.	P.O	0	All alive after 4 mos.	11 mos.
624a. 4-ACETHYLAMINOAZOBENZENE[4242]								
Morris, H. P., et al., 1960	18 rats[4243]	Buffalo	F	0.025% in diet for 9.2–12.4 mos. avg. daily intake 2.6 mg.	P.O	Tumors[4244, 4245].	Avg. age 20.4 mos.	About 18 mos.
625. SUDAN I[4246]								
Bonser, et al., 1956	32 mice	Albino		Paraffin wax pellet.[4234]	Implantation into lumen of the bladder.	Tumors[4247]	3 killed before 35 wks.	40 wks.
626. PHENYLAZO-2-NAPHTHYLAMINE[4248] 								
Allmark, M. G., and Grice, H. C., 1955.	Rats			0.03, 1.5 & 3.0% in diet for 10 & 65 wks.	P.O	0	1.5 & 3.0% level died at 10 wks.	65 wks.
	Rats		M & F	200 mg./kg. & 400 mg./kg. daily for 20 wks.	P.O	0		20 wks.
	Rats			90 mg. daily for 7 wks	P.O	0		7 wks.
Allmark, M. G., and et al., 1955.	50 rats (5–6 wks. old).		M & F āā	0.03% in diet, food consumption—12.3 g./F/d., 14.7 g./M/d.	P.O	2[4249]	22 M & 18 F at 65 wks.	65 wks.
	20 rats (5–6 wks. old).		M & F āā	200 mg./kg. daily 5/d./wk	P.O. stomach tube.	0	All survived	20 wks.
	20 rats (5–6 wks. old).		M & F āā	400 mg./kg. daily 5/d./wk	P.O. stomach tube.	0	All at 20 wks	20 wks.

[4234] Dose not specified.
[4242] p-phenylazoacetanilide.
[4243] Age: 3.6 months avg.
[4244] 1 mammary adenocarcinoma, 1 otic fibrosarcoma, 1 otic ductal tumor, 1 uterine fibrosarcoma, 1 reticulum cell sarcoma, 2 granulocytic leukemias, 3 pituitary adenomas, 1 intra-abdominal fibrosarcoma.
[4245] 18 untreated controls with 2 pituitary adenomas, 1 renal adenoma, 1 leukemia.
[4246] 1-phenylazo-2-naphthol.
[4247] Urinary cystic tumors: 6 benign, 8 non-invasive carcinomas.
[4248] FD&C Yellow No. 3.
[4249] 1 male with mesenteric reticulum cell sarcoma; 1 female with adrenomedullary adenoma.

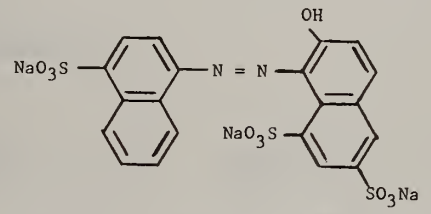
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
626. PHENYLAZO-2-NAPHTHYLAMINE (Continued)								
	50 rats		25 M, 25 F	1.5% in dry form in basic diet	P.O	0[4250]	2 survived 5 wks., M & F.	5 wks.
Nelson, A. A., and Davidow, B., 1957.	Rats	Osborne-Mendel.		1% glycerine susp. 1½ mg./wk	Inj	Tumors[4251, 4252].		13 mos.

627. 2,2′-([p-PHENYLENEIMINO(3-SULFO-p-PHENYLENE)]-BISAZO)BIS[7-(2,4-BIS[(SULFOMETHYL)-AMINO]PHENYLAZO)-1-NAPHTHOL-3-SULFONIC ACID] HEPTASODIUM SALT



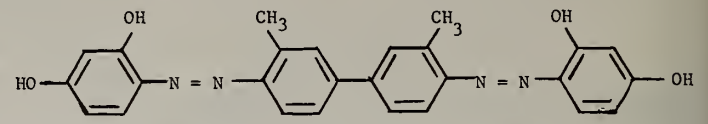
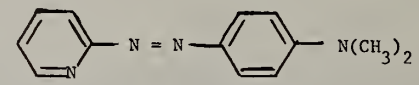
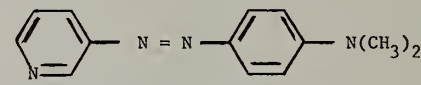
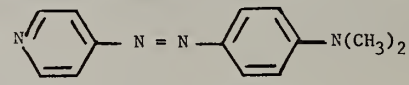
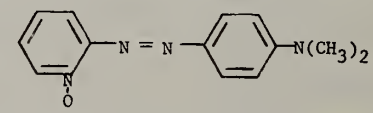
Hecht, G., and Wingler, A., 1952.	10 rats (50–55 g.).		M	0.02%–0.1% mixed with the food	P.O	0	10 at 200 d	At least 200 d.

628. PONCEAU 4R

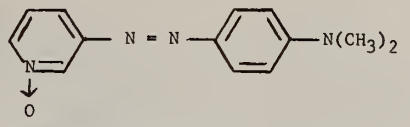
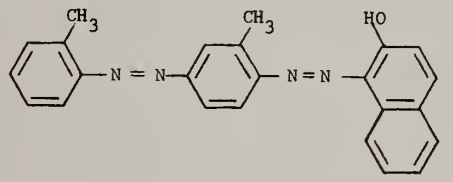
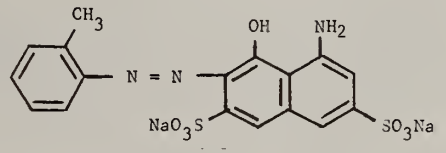


Gross, unpublished data[4253]	4 cats			5% in water soln	P.O. stomach tube.	(4254)		
Klinke, unpublished data[4227]	75 rats			10–15 mg. daily as 0.1% in food for duration.	P.O	0		
	10 rats			20–30 mg. daily as 0.2% in food for duration.	P.O	0		

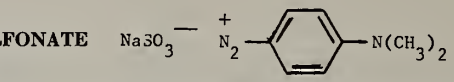
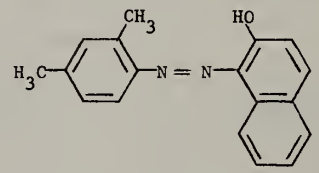
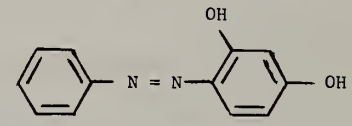
[4227] Recorded in "Toxikologische Daten . . . etc."
[4250] Death due to acute toxemia.
[4251] 1 injection site fibrosarcoma.
[4252] Glycerin controls negative.
[4253] Recorded in Toxikologische Daten, etc. 6: 1957.
[4254] Hematological study negative.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
				629. PYRAMIDOL BROWN T 				
Oka, K., et al., 1957	Rats			0.5 cc. of 1% soln. once/wk	Inj	0		Prolonged period.
Ooneda, G., et al., 1957	Rats		M & F	0.5 cc. of 1% soln. in dist. water once/wk.	S.C	0		365 d.
				630. PYRIDINE-2-AZO-DIMETHYLANILINE 				
Brown, E. V., et al., 1954A	10 rats	Sprague-Dawley.	M	0.06% in the diet throughout experiment.	P.O	0	Sacrificed at intervals.	12 mos.
				631. PYRIDINE-3-AZO-p-DIMETHYLANILINE 				
Brown, E. V., et al., 1954A	10 rats	Sprague-Dawley.	M	0.06% in the diet throughout experiment.	P.O	0	Sacrificed at intervals.	12 mos.
				632. PYRIDINE-4-AZO-p-DIMETHYLANILINE 				
Brown, E. V., et al., 1954A	10 rats	Sprague-Dawley.	M	0.06% in the diet throughout experiment.	P.O	6[3979]	Sacrificed at intervals.	8 mos.
				633. PYRIDINE-1-OXIDE-2-AZO-p-DIMETHYLANILINE 				
Brown, E. V., et al., 1954A	10 rats	Sprague-Dawley.	M	0.06% in the diet throughout experiment.	P.O	0	Sacrificed at intervals.	12 mos.

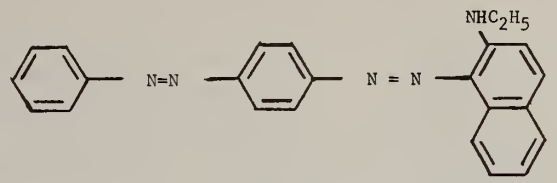
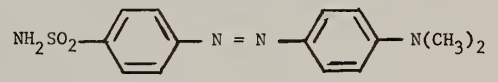
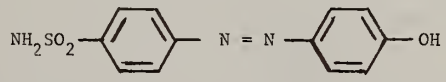
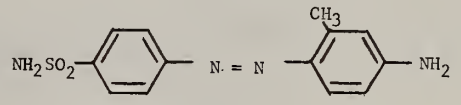
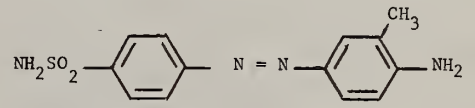
[3979] Hepatomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
634. PYRIDINE-1-OXIDE-3-AZO-p-DIMETHYLANILINE 								
Brown, E. V., et al., 1954B	10 rats	Sprague-Dawley.	M	0.06% in the diet throughout experiment.[4231]	P.O	4[3979]	Sacrificed at intervals.	6 mos.
635. PYRIDINE-1-OXIDE-4-AZO-p-DIMETHYLANILINE								
Brown, E. V., et al., 1954A	5 rats	Sprague-Dawley.	M	0.06% in the diet throughout experiment with short intervals on normal diet.	P.O	5[3979]	All died at 4 mos	4 mos.
636. SCARLET RED 								
Umeda, M., 1957	24 rats	Hybrid		0.2 cc. of 2 g./10 cc. Tween 80 soln. once/wk.	S.C. back	Tumors[4255]	8 at 13 mos	At least 15 mos.
Umeda, M., 1958	24 rats	Albino		0.2 cc. of 2 g./10 cc. in Tween 80 once/wk. for about 13 mos.	S.C	Tumors[4256]	3 died within 200 d., 8 at 403 d.	504 d.
637. SEMITRYPAN BLUE 								
Fujita, K., et al., 1957a	20 rats		6 M, 14 F	1 ml. of 2% soln. (20 mg.) dissolved in cold sterile dist. water wkly. or biwkly., total 400 mg.[4257]	S.C	0	16 at 300 d	300 d.

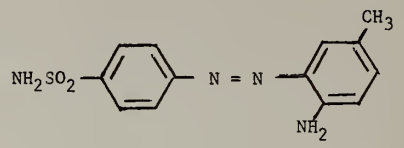
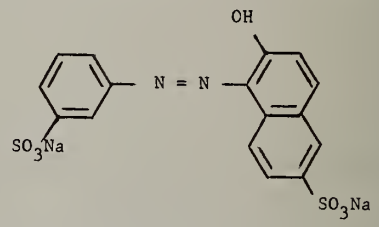
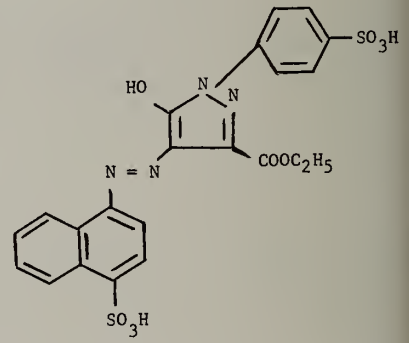
[3979] Hepatomas.
[4231] Low protein diet.
[4255] 1 rhabdomyosarcoma, 3 fibrosarcomas.
[4256] Injection site tumors: 3 fibrosarcomas, 1 rhabdosarcoma, at 403–463 days. Successfully transplanted.
[4257] Synthesized: impurities negligible.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
638. SODIUM p-DIMETHYLAMINOBENZENEDIAZONIUM SULFONATE 								
Miller, J. A., et al., 1957	20 adult rats	Albino, Holtzman.	M	Dissolved in corn oil, 1.35 mM/kg. of diet for 15 mos.	P.O	0	12 alive after 15 mos.	17 mos.
	20 adult rats	Albino, Holtzman.	M	Dissolved in corn oil, 4.00 mM/kg. of diet for 15 mos.	P.O	0	14 alive at end of 15 mos.	17 mos.
639. SUDAN II[4258] 								
Allmark, M. G., et al., 1956	40 rats		āā M & F	0.03% in diet	P.O	0	2 M. at 66 wks., 11 F. at 66 wks.	66 wks.
	20 rats		āā M & F	200 mg./kg. daily	P.O. stomach tube.	0	5 M. at 20 wks., 10 F. at 20 wks.	20 wks.
	20 rats		āā M & F	400 mg./kg. daily	P.O. stomach tube.	0	5 M. at 66 wks., 7 F. at 66 wks.	66 wks.
Fitzhugh, O. G., et al., 1956	16 dogs			0.01–0.2% for 26 d.—2 yrs	P.O	0		2 yrs.
	Rats			0.25 & 0.1% in diet for 2 yrs	P.O	0[4259]	Early deaths in 0.25% level.	2 yrs.
Nelson, A. A., and Davidow, B., 1957.	Rats	Osborne-Mendel.		1% glycerin susp. 1½ mg./wk	Inj	0[4260]		13 mos.
Nelson, A. A., 1958	Rats			1 or 2% in food	P.O	0		
	Dog			5–100 mg. 1 kg. up to 6 yrs	P.O	0		6 yrs.
Unpublished data from A. A. Nelson.	3 dogs			5 mg./kg./d., 72–73 mos.[4261]	P.O	0		73 mos.
640. SUDAN G 								
Klinke, unpublished data[4253]	85 rats			10–15 mg. daily as 0.1% in food for duration.	P.O	0		

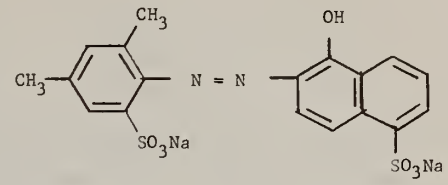
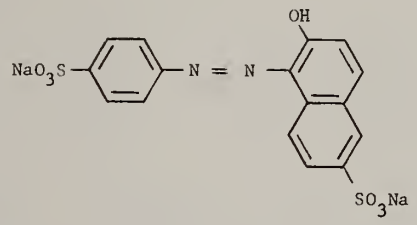
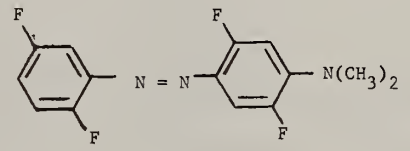
[4253] Recorded in Toxikologische Daten, etc. 6: 1957.
[4258] FD&C Red 32.
[4259] Hepatic lesions.
[4260] Hydrothorax and right heart hypertrophy.
[4261] FD&C Red No. 32 prepared from pure m-xylidine.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
641. SUDAN RED 7B 								
Klinke, unpublished data[4227]	75 rats			10–15 mg. daily as 0.1% in food for 350 d., total dose 3.4 g./animal.	P.O.	Tumors[4262]		350 d.
642. 4-SULFONAMIDO-4¹-DIMETHYLAMINOAZOBENZENE 								
Crabtree, 1956	12 rats[1019]	Wistar	M & F	Rat cube diet containing substance at level of 0.06%.	P.O.	3 (gross liver tumors).[4263]	Avg. 447 d.	447 d., approx.
643. 4-SULFONAMIDO-4¹-HYDROXYAZOBENZENE 								
Crabtree, 1956	12 rats[1019]	Wistar	M & F	Rat cube diet containing substance at level of 0.06%.	P.O.	0	Avg. 509 d.	Approx. 509 d.
644. 4-SULFONAMIDO-2¹-METHYL-4¹-AMINOAZOBENZENE 								
Crabtree, 1956	12 rats[1019]	Wistar	M & F	Rat cube diet containing substance at level of 0.06%.	P.O.	0	Avg. 460 d.	Approx. 460 d.
645. 4-SULFONAMIDO-3¹-METHYL-4¹-AMINOAZOBENZENE 								
Crabtree, 1956	12 rats	Wistar	M & F	Rat cube diet containing substance at level of 0.06%.	P.O.	3[4263]	Avg. 609 d.	Approx. 609 d.

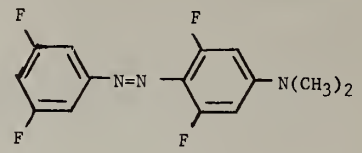
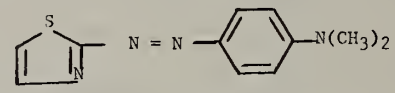
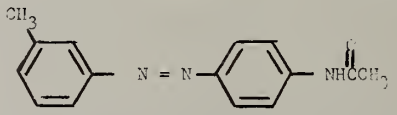
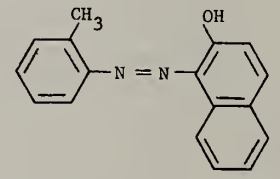
[1019] Age: 3–4 months.
[4227] Recorded in "Toxikologische Daten . . . etc.".
[4262] 1 hepatoma, 1 cecal tumor.
[4263] Minute hepatoma foci.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
646. 4-SULFONAMIDO-3¹-METHYL-6¹-AMINOAZOBENZENE 								
Crabtree, 1956	12 rats[1019]	Wistar	M & F	Rat cube diet containing substance at level of 0.06%.	P.O	0	Avg. 521 d	Approx. 521 d.
647. 1-(*m*-SULFOPHENYLAZO)-2-NAPHTHOL-6-SULFONIC ACID DISODIUM SALT 								
Hecht, G., and Wingler, A., 1952.	10 rats		M	0.02%–0.1% mixed in the food	P.O	0	9 at 8 mos	At least 410 d.
648. 1-p-SULFOPHENYL-3-ETHYLCARBOXY-4,4-SULFONAPHTHOAZO-5-HYDROXY PYRAZOLE 								
Hallesy, D., and Doull, J., 1956.[4237]	Rats	Sprague-Dawley.	M	2% in diet for 16 wks.[4264]	P.O	0[4265]	100%	16 wks.
	Rats	Sprague-Dawley.	M	1% in diet for 16 wks.[4264]	P.O	0[4265]	100%	16 wks.
	Rats	Sprague-Dawley.	M	5% in diet for 16 wks.[4264]	P.O	0[4265]	100%	16 wks.

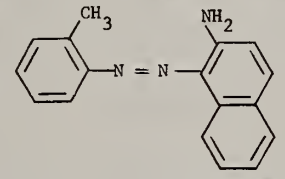
[1019] Age: 3–4 months.
[4237] From abstract.
[4264] As disodium salt.
[4265] No gross pathology.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
649. 2-(6-SULFO-2,4-XYLYLAZO)-1-NAPHTHOL-5-SULFONIC ACID DISODIUM SALT 								
Hecht, G., and Wingler, A., 1952.	10 rats (50–55 g.).	----------	M	0.02%–0.1% mixed with the good---	P.O----------	1[4266]-------	8 at 8 mos--------	At least 410 d.
650. SUNSET YELLOW[4268] 								
Bonser et al., 1956----------	15 mice------	Stock Albino----	M	0.05% in drinking water for 52 wks. (Total dose per mouse, 884 mg.)	P.O----------	3 (lymphomas).	9 alive at 20 wks--	70–89 wks.
	15 mice------	Stock Albino----	F	0.05% in drinking water for 52 wks. (Total dose per mouse, 884 mg.)	P.O----------	Tumors[4267]--	10 alive at 20 wks-	70–89 wks.
Oettel, unpublished data[4253]---	20 rats-------	----------	----------	1 ccm. of 1% twice wkly. for 55 injs. in 7 mos.	S.C----------	Tumors[4269]--	100%----------	At least 7 mos.
651. 2,5,2′,5′-TETRAFLUORO-4-DIMETHYLAMINOAZOBENZENE 								
Miller, J. A., et al., 1957------	10 adult rats--	Albino, Holtzman.	M	Dissolved in corn oil, 2.40 mM/kg. of diet for 5 mos.	P.O----------	6 (hepatomas)[4107].	All alive after 5 mos.	7 mos.

[4107] Gross hepatic cirrhosis at end of treatment.
[4253] Recorded in Toxikologische Daten, etc. 6: 1957.
[4266] 1 with sarcoma.
[4267] 6 lymphomas, 1 enteric polyp.
[4268] FD&C Yellow No. 6.
[4269] 1 intra-abdominal sarcoma.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
652. 2,6,3′,5′-TETRAFLUORO-4-DIMETHYLAMINOAZOBENZENE 								
Miller, J. A., et al., 1957	12 adult rats	Albino, Holtzman.	M	Dissolved in corn oil, 2.40 mM/kg. of diet for 6 mos.	P.O	0	All alive after 6 mos.	8 mos.
653. THIAZOLE-2-AZO-p-DIMETHYLANILINE 								
Brown, E. V., et al., 1954A	10 rats	Sprague-Dawley.	M	0.06% in the diet throughout experiment.	P.O	0	Sacrificed at intervals.	12 mos.
654. m-TOLYLAZOACETANILIDE 								
Morris, H. P., et al., 1960	18 rats[4270]	Buffalo	F	0.025% in diet for 4.9–12.4 mos., avg. daily intake 2.6 mg.	P.O	Tumors[4271, 4272]	Avg. age 19.5 mos.	About 18 mos.
655. o-TOLYLAZO-β-NAPHTHOL[4273, 4274] 								
Bonser, G. M., et al., 1954	Mice	Albino		3% soln. in arachis oil, twice wkly. for 50 wks.	S.C	Tumors[4275]	16 alive at 47 wks.	84 wks.
Allmark, M. G., et al., 1956	20 rats		M	0.03% in diet	P.O	0	7 at 44 wks	44 wks.
	20 rats		F	0.03% in diet	P.O	Tumors[4276]	13 at 66 wks	66 wks

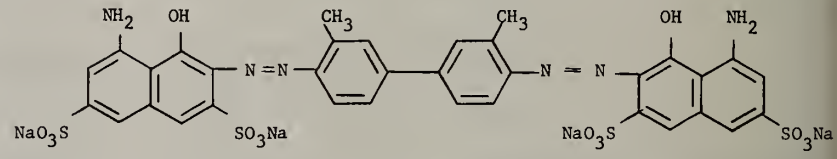
[4270] Age: 3.6 months avg.
[4271] 1 uterine adenocarcinoma, 1 uterine fibrosarcoma, 1 mammary tumor, 1 thyroid adenoma, 1 granulocytic leukemia, 1 adrenocortical adenoma, 2 pituitary adenomas.
[4272] 18 untreated controls with 2 pituitary adenomas, 1 renal adenoma, 1 leukemia.
[4273] FD&C Orange No. 2.
[4274] Purified by chromatography on alumina.
[4275] 3 injection site spindle cell sarcomas, 1 cecal adenocarcinoma, 1 cecal adenocarcinomatous polyp, 1 enteric adenomatous polyp, 5 pulmonary adenomas, 3 lymphomas, 1 mammary cancer. Controls comparable for pulmonary adenomas, lymphomas and mammary tumors.
[4276] 1 ovarian fibroma, 1 ovarian cystadenoma. (Relationship doubtful).

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
655. o-TOLYLAZO-β-NAPHTHOL (Continued)								
	20 rats		āā M & F	200 mg./kg. daily	P.O., stomach tube.	0	4 M. at 20 wks., 8 F. at 20 wks.	20 wks.
	20 rats		āā M & F	400 mg./kg. daily	P.O., stomach tube.	0	4 M. at 20 wks., 4 F. at 20 wks.	20 wks.
Bonser, et al., 1956	15 mice	Stock albino	M	0.1 cc. of 1.5% susp. in arachis oil, twice wkly. for 52 wks. (Total dose per mouse, 156 mg.)	S.C	1 (intestinal carc.)	4 alive at 20 wks	70–89 wks.
	15 mice	Stock albino	F	0.1 cc. of 1.5% susp. in arachis oil, twice wkly. for 52 wks. (Total dose per mouse, 156 mg.)	S.C	Tumors[4277]	11 alive at 20 wks	70–89 wks.
	15 mice	Stock albino	M	0.1% in diet for 52 wks. (Total dose per mouse, 728 mg.)	P.O	Tumors[4278]	12 alive at 20 wks	70–89 wks.
	15 mice	Stock	F	0.1% in diet for 52 wks.(Total dose per mouse, 728 mg.)	P.O	5 (lymphomas).	10 alive at 20 wks	More than 90 wks.
Fitzhugh, 0. G., et al., 1956	Dogs			0.01–0.2% in diet	P.O	0		
	Rats			0.25 & 0.1% in diet	P.O	0		
Nelson, A. A., and Davidow, B., 1957.	Rats	Osborne-Mendel.		1% glycerin susp. 1½ mg./wk	Inj	0[4260]		13 mos.
Clayson, D. B., et al., 1958	32 mice	Albino		12.5% in compressed cholesterol pellet.	Implanted into lumen of bladder.	Tumors[4279, 4280].	2 killed after 25 wks., 3 after 35 wks.	40 wks.
656. 1-o-TOLYLAZO-2-NAPHTHYLAMINE[4281] 								
Allmark, M. G., et al., 1955	50 rats (5–6 wks. old).		āā M & F	0.03% in diet, food consumption—12.1 g./F/d., 14.1 g./M/d.	P.O	0	12 M & 12 F at 65 wks.	65 wks.
	20 rats (5–6 wks. old).		āā M & F	200 mg./kg. daily 5 d./wk	P.O. stomach tube.	0	All at 20 wks	20 wks.
	20 rats (5–6 wks. old)		āā M & F	400 mg./kg. daily 5 d./wk	P. O. stomach tube.	0	7 M & 9 F at 20 wks.	20 wks.
	50 rats		25 M, 25 F	1.5% in dry form in basic diet	P.O	0[4282]	All died end of 5th wk., 1 male surv. till 10th wk.	10 wks.

[4260] Hydrothorax and right heart hypertrophy.
[4273] FD&C Orange No. 2.
[4274] Purified by chromatography on alumina.
[4277] 4 lymphomas, 3 sarcomas, 1 enteric carcinoma, 1 enteric polyp.
[4278] 1 lymphoma, 9 enteric polyps, 1 enteric carcinoma.
[4279] 12 carcinomas (5 invasive, 7 non-invasive); 2 benign urinary cystic tumors.
[4280] 55 cholesterol treated controls with 5 non-invasive carcinomas.
[4281] FD&C Yellow No. 4.
[4282] Death due to acute toxemia.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
656. 1-o-TOLYLAZO-2-NAPHTHYLAMINE (Continued)								
Allmark, M. G., and Grice, H. C., 1955	Rats			0.03, 1.5 & 3.0% in diet for 10 – 65 wks.	P.O	0	1.5 & 3.0% level died at 10 wks.	65 wks.
	Rats		M & F	200 & 400 mg./kg. daily for 20 wks	P.O	0		20 wks.
Nelson, A. A., and Davidow, B., 1957.	Rats	Osborne-Mendel.		1% glycerin susp. 1½ mg./wk	Inj	Tumors[4283, 4284].		13 mos.

657. TRYPAN BLUE[4285]

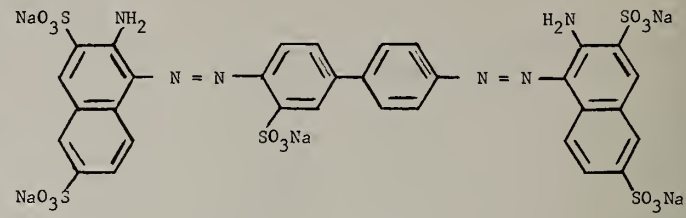
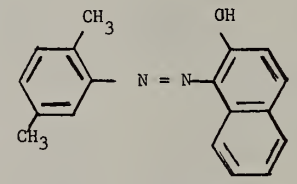


Gillman, J., et al., 1954	101 adult rats			1 cm.³ of 1% aqueous soln. fortnightly intervals.	S.C	Tumors[4286]	5 of control rats died before 100th d.	At least 100 d.
Sayama, Y., et al., 1954	40 rats	Hybrid-Albino	M	0.5 cc. of 1% soln. in water/150 g. of body wt. 7 times fortnightly & fed rice diet.	S.C			
Brown and Thorson, 1956	50 rats[4287]	Wistar	M	0.1 cc. of 1% aqueous soln. at 2 wk. intervals (total dose, 440 mg.).	S.C., r. & l. groin.	Tumors[4288]	46 alive at 150 d	613 d.
	50 rats[4287]	Wistar	M	0.1 cc. of 1% squeous soln. at 2 wk. intervals (total dose, 220 mg.).	S.C., r. & l. groin.	10[4289]	47 alive at 300 d	613 d.
Fujita, K., et al., 1956	3 rats	Mixed		(1,3 & 5) 10 mg. injs. for 6 wks.[4290]	S.C	0[4291]		6 wks.
	1 rat	Mixed		(5) 10 mg. injs. for 6 wks.[4290]	S.C	0[4292]		6 wks.
	3 rats	Mixed		(5) 10 mg. inj.[4290]	S.C	0[4292]		6 wks.
	3 rats	Mixed		(1) 10 mg. inj.[4290]	S.C	0[4292]		6 wks.
Ruttner, J. R., and Brunner, H. E., 1956.	20 rats	White		2% squeous soln. 1 ml. every 2 wks	I.P	0	Killed at reg. intervals.	475 d.
Oka, K., et al., 1957	Chickens			0.5 cc. of 1% soln. once/wk	Inj	0		Prolonged period.
	Guinea pigs			0.5 cc. of 1% soln. once/wk	Inj	0		Prolonged period.

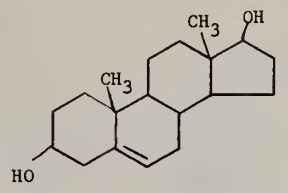
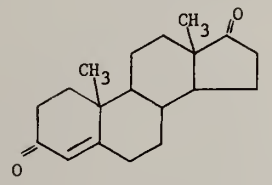
[4281] FD&C Yellow No. 4.
[4283] 5 or 6 with injection site fibrosarcomas.
[4284] Glycerin controls negative.
[4285] Grubler.
[4286] 71/96 (76%) with reticulum cell sarcomas.
[4287] Age: approximately 3 months.
[4288] 14 hepatic reticulum cell sarcomas (some invasive); 5 injection site spindle cell sarcomas.
[4289] 10 hepatic reticulum cell sarcomas (some invasive).
[4290] Not pure.
[4291] Electrophoretic study.
[4292] Liver fraction study.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
				657. TRYPAN BLUE[4289]				
	Rats			0.5 cc. of 1% soln. once/wk	P.O	0		Prolonged period.
	6 rats			0.5 cc. of 1% soln. once/wk	Inj	Tumors[4293]	100%	Prolonged period.
	Mice			0.5 cc. of 1% soln. once/wk	Inj	0		Prolonged period.
Ooneda, G., et al., 1957	18 mice	DMK		0.2 cc. of 1% soln. in dist. water once/wk.	S.C	0[4294]		365 d.
	Rats	Wistar & unknown.	M & F	0.5 cc. of 1% soln. in dist. water or saline once/wk.	S.C. or I.P	Tumors[4295, 4296].	25 for 104 d., 24 for 105–213 d., 40 for 214–365 d.	365 d.
Ooneda, G., et al., 1957	13 rats	Wistar	M	0.5 cc. of 1% soln. in dist. water twice wkly. for 7 wks., later once a wk. for 2–8 wks.	S.C	0		At least 15 wks.
	Rats	Wistar & unknown.	M & F	0.1% soln. as drinking water	P.O	0[4298]	1 for 105–213 d., 4 for 214–365 d.	365 d.
	3 chickens			4 cc. of 1% soln. in dist. water once/wk.	S.C	0		365 d.
	17 guinea pigs.			1.2 cc. of 1% soln. in dist. water once/wk.	S.C	0		365 d.
	4 rats	Wistar	M	0.5 cc. of 1% soln. in dist. water twice wkly. for 7 wks., later once/wk. for 2–8 wks.	S.C	0[4299]		At least 15 wks.
	13 rats[4300]	Wistar	M	0.5 cc. of 1% soln. in dist. water twice wkly. for 7 wks., later once/wk., for 2–8 wks.	S.C	0[4301]		At least 15 wks.
Papacharalampous, N. X., 1957.	20 rats		M & F	1 cc. of 1% aqueous soln. wkly	I.P	Tumors[4302]		430 d.
Papacharalampous, N. X., 1958.	20 rats		M & F	1–1.5 ml. of 1% aqueous soln. of Trypan blue every other d. for 3 wks.	I.P	Tumors[4303]		At least 280 d.
Brown, D. V., and Norlind, L. M., 1959.	Rats			Dilute soln. for prolonged period of time.	Inj	Tumors[4304]		

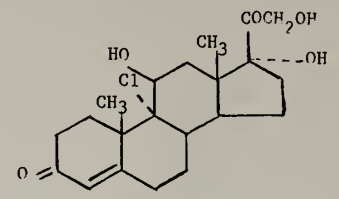
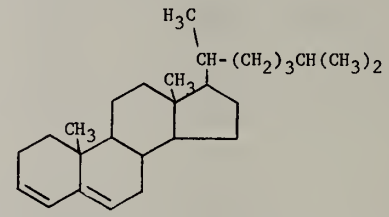
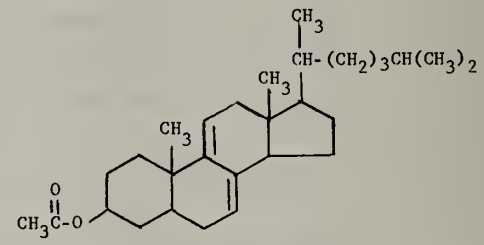
[4285] Grubler.
[4289] 10 hepatic reticulum cell sarcomas (some invasive).
[4293] 6 hepatic reticulum cell sarcomas (4 metastatic).
[4294] Hepatic, splenic, pulmonary, renal and nodal cellular proliferation.
[4295] 6 with hepatic reticulum cell sarcomas (4 metastatic).
[4296] Distilled water or saline controls negative.
[4297] Bilateral adrenalectomy 7 weeks after start. Water contained 1% NaCl.
[4298] Splenic and nodal reticulum cell proliferation.
[4299] 100% with hepatic nodular lesions.
[4300] Right side adrenalectomy, left side adrenal enucleation at 7th week of treatment.
[4301] Hepatic nodular lesions at 4 weeks.
[4302] 3 with abdominal spindle and polymorphic cell sarcoma.
[4303] 1 with hepatic reticulum cell sarcoma at 130 days.
[4304] Hepatic histiocytomas. Nodal, marrow and splenic reticulum cell sarcomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
				658. TRYPAN RED 				
Oka, K., et al., 1957	Rats			0.5 cc. of 1% soln. once/wk	Inj	0		Prolonged period.
Ooneda, G., et al., 1957	Rats		M & F	0.5 cc. of 1% soln. in dist. water once/wk.	S.C	0		365 d.
				659. XYLYAZO-2-NAPHTHOL 				
Bonser et al., 1956c	15 mice	Stock albino	F	0.1% in diet for 52 wks. (Total dose per mouse, 728 mg.)	P.O	Tumors[4305]	10 alive at 20 wks	70–89 wks.
	15 mice	Stock albino	M	0.1% in diet for 52 wks.(Total dose per mouse, 728 mg.)	P.O	Tumors[4306]	11 alive at 20 wks	70–89 wks.
	15 mice	Stock albino	F	0.1 cc. of 3% susp. in arachis oil, twice wkly. for 52 wks. (Total dose per mouse, 312 mg.)	S.C	2 (lymphomas).	3 alive at 20 wks	70–89 wks.
	15 mice	Stock albino	M	0.1 cc. of 3% susp. in arachis oil, twice wkly. for 52 wks. (Total dose per mouse, 312 mg.)	S.C	Tumors[4307]	7 alive at 20 wks	70–89 wks.

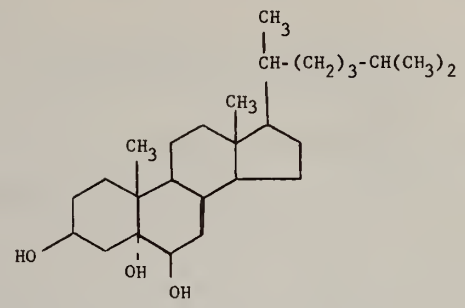
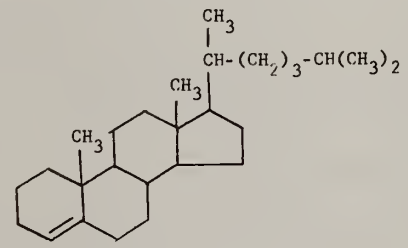
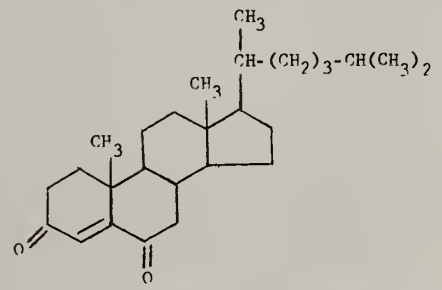
[4305] 8 lymphomas, 1 enteric polyp.
[4306] 5 lymphomas, 3 enteric polyps.
[4307] 2 lymphomas, 1 hepatoma.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
660. ANDROSTENEDIOL 								
Vol'fson, N. I., 1958	11 mice[4308]	C3HA	F	(2) 10 mg. in paraffin and lanolin pellets every mo., alternating on l. and r. side.	S.C. implant	0[4309,4310]	2 at 20 mos	Up to 25 mos.
661. Δ4-ANDROSTENEDIONE-3,17 								
Bischoff, F., 1957	64 mice	Marsh-Buffalo	M	5–15 mg. in sesame oil colloidal soln. or susp. 2 or 3 times, total dose 15–20 mg.	S.C. dorsal	Tumors[4311, 4312]		15 mos.
	33 mice[198]	Marsh-Buffalo	F	5–15 mg. in sesame oil colloidal soln. or susp. 2 or 3 times, total dose 15–20 mg.	S.C. dorsal	0[4313,4314]		15 mos.
Vol'fson, N. I., 1958	12 mice[198,4308]	C3HA	F	(2) 10 mg. in paraffin and lanolin pellets every mo., alternating on l. and r. side.	S.C. implant	0[4310,4315]	4 at 20 mos	Up to 25 mos.
	18 mice[4308]	C3HA	F	(2) 10 mg. in paraffin and lanolin pellets every mo., alternating on l. and r. side.	S.C. implant	0[4310,4316]	5 at 20 mos	Up to 25 mos.

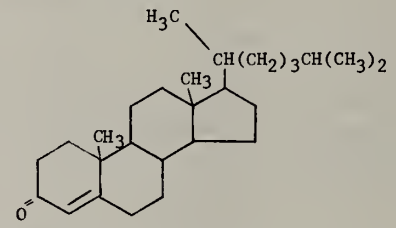
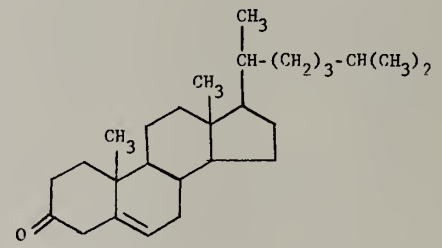
[198] Castrated.
[4308] Survivors at 11 months, 27 days.
[4309] 3/11 (21.4%) with mammary tumors (1 with pulmonary metastases).
[4310] 11/19 (57.9%) paraffin-lanolin pellet controls with mammary tumors (3 with pulmonary metastases).
[4311] 5% with lymphoid tumors, 13% with fibrosarcomas.
[4312] 5% of 79 sesame oil controls with lymphoid tumors.
[4313] 33% with adenocarcinomas, 3% with fibrosarcomas.
[4314] 13% of 98 sesame oil controls with adenocarcinomas; 7.5% with fibrosarcomas.
[4315] 1/12 (8.3%) with mammary tumor.
[4316] 2/18 (11%) with manmary tumors.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
662. 9α-CHLOROHYDROCORTISONE 								
Selye, H., 1955	10 rats[4317]	Sprague-Dawley.	F	20 μg. in 0.1 ml. sesame oil/d. for 30 d.	S.C	0[4318]	All sacrificed	31 d.
663. Δ3,5-CHOLESTADIENE[4319,4320] 								
Hieger, I., 1957	10 mice			10% soln. in lard	S.C	0	1 at 27 mos	27 mos.
	10 mice			15% saturated soln. in lard	S.C	0	1 at 30 mos	30 mos.
664. 7,9(11)-CHOLESTADIEN-3β-ol, ACETATE 								
Bischoff, F., 1957	32 mice	Marsh-Buffalo	M	5–15 mg. in sesame oil colloidal soln. or susp. 2 or 3 times, total dose 15–20 mg.	S.C. dorsal	0[4312,4321]		15 mos.
	34 mice	Marsh-Buffalo		Unspecified amt. as aqueous colloid	S.C. dorsal	0[4322]		15 mos.

[4312] 5% of 79 sesame oil controls with lymphoid tumors.
[4317] Unilateral nephrectomy. Water contained 1% NaCl.
[4318] Mesenteric periarteritis nodosa.
[4319] Not pure.
[4320] Cholesterylene.
[4321] 12% lymphoid tumors.
[4322] Negative for fibrosarcomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
665. 5α-CHOLESTANE-3β-5α,6β-TRIOL 								
Bishoff, F., 1957	Mice	Marsh-Buffalo		Unspecified amt. as aqueous colloid	S.C. dorsal	0[4322]		15 mos.
666. Δ-[4]CHOLESTENE 								
Hieger, I., 1957	10 mice			15% soln. in lard	S.C.	0	2 at 27 mos	27 mos.
667. Δ[4]-CHOLESTENE-3,6-DIONE 								
Bischoff, F., et al., 1955	33 mice		M	Unspecified amt. in sesame oil		Tumors[4323]		
	32 mice	Marsh-Buffalo	M	5–15 mg. in sesame oil colloidal soln. or susp. 2 or 3 times, total dose 15–20 mg.	S.C. dorsal	Tumors[4324, 4325]		15 mos.

[4322] Negative for fibrosarcomas.
[4323] 34% with fibrosarcomas. Sesame oil controls negative.
[4324] 34% with fibrosarcomas.
[4325] 79 sesame oil controls negative.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
667. Δ^4-CHOLESTENE-3,6-DIONE (Continued)								
	33 mice[198]	Marsh-Buffalo	F	5–15 mg. in sesame oil colloidal soln. or susp. 2 or 3 times, total dose 15–20 mg.	S.C. dorsal	0[4326,4327]		15 mos.
Hieger, I., 1959	55 mice	Stock		Unspecified amt. in olive oil	S.C.	0	31 at 12 mos., 4 at 24 mos.	At least 24 mos.
668. CHOLESTENONE[4328] 								
Bischoff, F., 1957	34 mice	Marsh-Buffalo	F	5–15 mg. in sesame oil colloidal soln. or susp. 2 or 3 times, total dose 15–20 mg.	S.C. dorsal	0[4329,4330]		15 mos.
	35 mice[198]	Marsh-Buffalo	F	5–15 mg. in sesame oil colloidal soln. or susp. 2 or 3 times, total dose 15–20 mg.	S.C. dorsal	0[4331,4332]		15 mos.
669. Δ5-CHOLESTEN-3-ONE 								
Bischoff, F., 1957	Mice	Marsh-Buffalo		Unspecified amt. as aqueous colloid	S.C. dorsal	0[4322]		15 mos.
Hieger, I., 1959	51 mice	C57		Unspecified amt. in olive oil	S.C.	Tumors[4333]	38 at 12 mos., 11 at 24 mos.	At least 24 mos.
	40 mice	Stock		Unspecified amt. in olive oil	S.C.	0	14 at 12 mos., 4 at 21 mos.	At least 21 mos.

[198] Castrated.
[4326] 15% with adenocarcinoma, 3% with lymphoid tumors, 3% with fibrosarcomas.
[4327] Of 98 sesame oil controls, 13% with adenocarcinoma, 12% with lymphoid tumors, 7.5% with fibrosarcomas.
[4328] 4-cholesten-3-one.
[4329] 68% adenocarcinomas, 12% lymphoid tumors, 3% fibrosarcomas.
[4330] Of 72 sesame oil controls, 64% adenocarcinomas, 7% lymphoid tumors, 3% fibrosarcomas.
[4331] 32% lymphoid tumors.
[4332] Of 98 sesame oil controls, 12% with lymphoid tumors.
[4333] 1 sarcoma.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
670. CHOLESTEROL								
Peterson, J. E., and Hirst, A. E., 1952.	25 cockerels	White Leghorn		2 crystalline g./100 g. mash fed, dissolved in veg. oil.[4334]	P.O	0[4335]	Killed at various intervals.	Up to 2 yrs.
Buck, R. C., 1954	8 rabbits		M	1% in the diet	P.O	0	Sacrificed at 3 to 6 mos.	6 mos.
Duff and Meissner, 1954	23 rabbits	White	M & F	1 g. daily in the diet for 3 mos. then cholene supplement.	P.O	0		9 mos.
	24 rabbits	White	M & F	1 g. in the diet, 3 d. per wk. for 80 to 100 d.[4336]	P.O	0		At least 100 d.
	18 rabbits	White	M & F	1 g. in the diet daily for 75 d.[4337]	P.O	0		At least 75 d.
	14 rabbits	White	M & F	1 g. daily in the diet for 93 d.[4338]	P.O	0		At least 93 d.
Duff, G. L., et al., 1954	13 rabbits	White	M & F	1 g. per d. in the diet for 76 d	P.O	0		3 mos.
	18 rabbits	White	M & F	0.75 g. daily as a 5% soln. in corn oil, 57–90 d.	P.O.[4339]	0	9 died	3 mos.
Goldner, M. G., et al., 1954	18 rabbits	Swiss	M	1 g. daily in the diet.[4340]	P.O	0[4341]		12 wks.
	22 rabbits	Swiss	M	2 g. per d. in the diet.[4340]	P.O	0[4341]		8 wks.
Hieger, I., and Orr, S. F. D., 1954.	108 mice	C57	M & F	Lard as solvent.[4342]	S.C	Tumors[4343]	6 at 27 mos	27 mos.
	45 mice	Stock	M & F	Lard as solvent.[4342]	S.C	Tumors[4344]	1 at 27 mos	27 mos.
	10 mice	C3H	M	Lard as solvent.[4342]	S.C	0	1 at 15 mos	15 mos.
	20 mice	MRC	15 M, 5 F	Lard as solvent.[4342]	S.C	Tumors[4345]	2 at 24 mos	24 mos.
	14 mice	Stock	9 M, 5 F	Lard as solvent.[4346]	S.C	Tumors[4347]	8 at 15 mos	Up to 30 mos.
Hieger, I., and Orr, S. F. D., 1954.	20 mice	C57	15 M, 5 F	Lard as solvent[4346]	S.C	0		Up to 24 mos.
Hieger, I., and Orr, S. F. D., 1954.	172 mice	C57	M & F	As olive oil soln.[4348]	S.C	Tumors[4349]	110 at 15 mos	Up to 30 mos.
	60 mice	C57		As olive oil soln.[4342]	S.C	Tumors[4333]	21 at 15 mos	Up to 27 mos.
	135 mice	Stock		As olive oil soln.[4342]	S.C	Tumors[4350]	77 at 15 mos	Up to 30 mos.
	100 mice	Stock		As olive oil soln.[4342]	S.C	Tumors[4351]	2 at 27 mos	Up to 27 mos.

[4333] 1 sarcoma.
[4334] Removed from cholesterol diet at various intervals.
[4335] Atherosclerosis at 4½ months.
[4336] Some also received choline.
[4337] Some also received choline.
[4338] 8 received choline.
[4339] Gavage.
[4340] Some with caloric restriction.
[4341] Atherosclerosis study.
[4342] Commercial.
[4343] 10 sarcomas.
[4344] 5 sarcomas.
[4345] 2 sarcomas.
[4346] Purified by bromination.
[4347] 1 sarcoma, at 27 months.
[4348] Purified.
[4349] 5 injection site sarcomas, latent period 15.23 months.
[4350] 6 sarcomas.
[4351] 8 sarcomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
670. CHOLESTEROL (Continued)								
	100 mice	CBA		As olive oil soln.[4342]	S.C	Tumors[4345]	5 at 30 mos	Up to 33 mos.
	10 mice	CBA	5 M, 5 F	Lard as solvent.[4342]	S.C	0	1 at 21 mos	21 mos.
Horita, A., and Loomis, T. A., 1954.	Chickens	Rhode Is. Red	M	2% in diet plus 5% cotton seed oil	P.O	0	Some sacrificed at 8 wks.	12 wks.
Horlick & Duff, 1954	17 rabbits	New Zealand	M & F	1 g. per d. in the diet for 12 wks	P.O	0		Over 12 wks.
	30 rabbits		M & F	0.75 g. per d. in the diet for 12 wks	P.O	0	Several died by 8th wk.	Over 12 wks.
Kritchevsky, D., et al., 1954	Rabbits	Dutch Belted		3% in the diet.[4352]	P.O	0[4353]		2 mos.
Loewe, L., et al., 1954	Rabbits	Swiss	M	2 g. per d. in diet for 9 wks.[4354]	P.O	0[4341]		9 wks.
McMillan, G. C., et al., 1954	150 rabbits	New Zealand	M & F	0.5, 0.75 or 1 g. daily in the diet	P.O	0[4341]		Up to 110 d.
Opdyke and Ott, 1954	38 fowls	White Leghorn, New Hampshire & Hyline.	M	2% plus 5% cotton seed oil in diet for 8 wks.	P.O	0		8 wks.
	36 fowls	White Leghorn, New Hamsphire & Hyline.	M	2% plus 5% cotton seed oil in the diet.	P.O	0		8 wks.
Ridout, J. H., et al., 1954 (A)	20 rats	Wistar	M	0.2 or 0.8% in the diet for 90 d	P.O	0[4355]		90 d.
	60 rats	Wistar	F	0.5% in the diet for 49 d	P.O	0[4355]	Killed at intervals	7 wks.
Ridout, J. H., et al., 1954 (B)	Rats	Wistar	M	0.2 or 0.8% in the diet for 3 mos	P.O	0[4355]		3 mos.
Shull, K. H., et al., 1954	Dogs	Mongrel	M & F	10, 20 or 30 g. per d. in corn oil in diet for various period, $6\frac{1}{2}$ to $48\frac{1}{2}$ wks.[4356]	P.O	0		$48\frac{1}{2}$ wks.
Stamler, J., et al., 1954 (A)	Chicks[4357]	Hyline	M	0.5 or 1.0% in diet plus cotton seed oil.	P.O	0[4358]		At least 10 wks.
Stamler, J., et al., 1954 (B)	Chickens		M & F	1 or 2% in the diet	P.O	0[4341]		5 to 11 wks.
Stumpf and Wilens, 1954	6 rabbits			1% in the food	P.O	0		84 d.
Lindsay, S., et al., 1955	15 fowls	White Leghorn	M	Add 2% and 5% cottenseed oil to Purina broiler chow for period up to 11 mos.	P.O	0[4359]	Many killed at bimthly. intervals up to 8 mos. after cholesterol feeding was stopped.	19 mos.

[4341] Atherosclerosis study.
[4342] Commercial.
[4345] 2 sarcomas.
[4352] Some with corn oil, some with hydrogenated vegetable oil.
[4353] Vascular pathology study.
[4354] Various diets.
[4355] No pathology reported. Biochemical study.
[4356] Methionine supplement to some diets.
[4357] Age: 1 day.
[4358] Atherosclerosis produced.
[4359] Pathogenesis of thoracic and abdominal lesions similar to natural occurring disease. Increased severity due to increased lipid infiltration and other complicating features.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
670. CHOLESTEROL (Continued)								
Opdyke, D. F., et al., 1955	24 cockerels.[4360]	White Leghorn		2% in stadard starter mash with 5% Wesson Oil for 8 wks.	P.O	0[4361]		8 wks.
Rudali, G., et al., 1955	11 (3 mo. old) rats.	Wistar	M & F	10 mg. pellet	In bladder cavity.	0[4362]	8 at 410 d	410 d.
Wilens, S. L., and Stumpf, H. H., 1955.	6 rabbits			1% in diet for 28 d., interrupted for 2 wks., resumed for 2 wks., interrupted for 2 wks., resumed for 2 wks.	P.O	0[4363]	All sacrificed	84 d.
Bevans, M., and Mosbach, E., 1956.	3 rabbits	Chinchilla	M	1% in stock diet 6–13 wks	P.O	0	All sacrificed	13 wks.
Boyland, E., and Watson, G., 1956.	25 mice			Unspecified amt. as pellet	Bladder implant, lumen of bladder tied off.	0	8 at 40 wks	40 wks.
Wilens, S. L., et al., 1956	6 rabbits	Albino		1% in diet	P.O	0	100% at 10 wks	10 wks.
Bischoff, F., 1957	64 mice	Marsh-Buffalo		Unspecified amt. as aqueous colloid	S.C. dorsal	0[4322]		15 mos.
	64 mice	Marsh-Buffalo	M	5–15 mg. in sesame oil colloidal soln. or susp. 2 or 3 times, total dose 15–20 mg.	S.C. dorsal	Tumors[4312, 4364]		15 mos.
	20 mice[198]	Marsh-Buffalo	M	5–15 mg. in sesame oil colloidal soln. or susp. 2 or 3 times, total dose 15–20 mg.	S.C. dorsal	0[4365, 4366]		15 mos.
	35 mice	Marsh-Buffalo	F	5–15 mg. in sesame oil colloidal soln. or susp. 2 or 3 times, total dose 15–20 mg.	S.C. dorsal	0[4367, 4368]		15 mos.
Duff, G. L., et al., 1957	250 rabbits	New Zealand White.		1 g. with 93 g. food given daily.	P.O	0[4369, 4370]	Until death	Life of animal.
Hieger, I., 1957	109 mice	Stock		Dissolved in olive oil, highly purified	S.C	Tumors[4371]	Epidemic at about 10 mos., 102 mice died.	10 mos.
Hieger, I., 1957	115 mice[4372]	Stock		Dissolved in olive oil, highly purified.	S.C	Tumors[4373]	66 at 12 mos., 10 at 21 mos.	23 mos.
	39 mice	C57		Dissolved in olive oil[4342]	S.C	Tumors[4374]	11 at 21 mos., epidemis at 21 mos.	21 mos.

[198] Castrated.
[4312] 5% of 79 sesame oil controls with lymphoid tumors.
[4322] Negative for fibrosarcomas.
[4342] Commercial.
[4360] Age: 8 weeks.
[4361] 67% with aortic atherosclerosis.
[4362] Survivors not included.
[4363] 1 with glomerular lesions.
[4364] 9% lymphoid tumors, 13% fibrosarcomas.
[4365] 45% lymphoid tumors.
[4366] 9% of 62 sesame oil controls developed lymphoid tumors.
[4367] 57% adenocarcinomas, 15% lymphoid tumors.
[4368] 64% of 72 sesame oil controls developed adenocarcinomas, 7% lymphoid tumors.
[4369] Atherosclerotic lesions at 16 hours after cholesterol feeding.
[4370] Untreated controls with atherosclerosis.
[4371] 3 sarcomas at 8½–10 months.
[4372] Housed in "carcinogen-laden" room.
[4373] 11 sarcomas at 9½–23 months.
[4374] 3 sarcomas at 12–18 months.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
670. CHOLESTEROL (Continued)								
	75 mice[4372]	C57		Dissolved in olive oil[4342]	S.C.	Tumors[4375]	46 at 12 mos., 3 at 24 mos.	At least 24 mos.
	30 mice	C57		Dissolved in olive oil[4342]	S.C.	Tumors[4376]	10 at 12 mos., 3 at 25 mos.	25 mos.
Homburger, F., et al., 1957	1 hamster	Syrian Golden	M	Unspecified amt. in pellet	S.C. implant	Tumors[4377]		At least 8 mos.
Mignani, E., and Bettini, U., 1957.	6 rabbits		M	1 g. in the diet daily	P.O	0	Sacrificed at 40 d	40 d.
Westberg, J. A., et al., 1957	20 mice	A/He	10 āā	3 mg. pellet implant	S.C. middorsal region.	0[4378]		30 d.
	17 mice	BALB/c x C3H	9 M, 8 F	3 mg. pellet implant	S.C. middorsal region.	0[4378]		30 d.
	26 mice	C3H x BALB/c	8 M, 18 F	3 mg. pellet implant	S.C. middorsal region.	0[4378]		30 d.
	18 mice	A x BALB/c	9 āā	3 mg. pellet implant	S.C. middorsal region.	0[4378]		30 d.
	24 mice	BALB/c x A	12 āā	3 mg. pellet implant	S.C. middorsal region.	0[4378]		30 d.
	20 mice	C57BL	10 āā	3 mg. pellet implant	S.C. middorsal region.	0[4378]		30 d.
	20 mice	C3H/He	10 āā	3 mg. pellet implant	S.C. middorsal region.	0[4378]		30 d.
	20 mice	BALB/c	10 āā	3 mg. pellet implant	S.C. middorsal region.	0[4378]		30 d.
	17 mice	C3H x C57	7 M, 10 F	3 mg. pellet implant	S.C. middorsal region.	0[4378]		30 d.
	23 mice	C57 x C3H	8 M, 15 F	3 mg. pellet implant	S.C. middorsal region.	0[4378]		30 d.
Zeppa, R., and Womack, N. A., 1957.	24 mice	C3H	M	0.03–0.05 ml. of 5% soln. in mineral oil.	Inj. into gall-bladder.	0	Good survival	1 yr.
Buck, R. C., 1958	13 rabbits		M	1.5% in diet up to 7 mos	P.O	0[4379]	Killed at 14 d., 1,2,3,5 & 7 mos.	7 mos.
	3 rabbits		M	1.5% in diet with 5% corn oil for 6 mos.	P.O	0[4380]		6 mos.
Clayson, D. B., et al., 1958	55 mice	Albino		Compressed pellet	Implanted into the lumen of bladder.	Tumors[4381]	100%	40 wks.

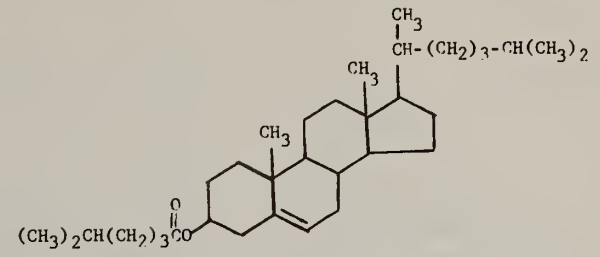
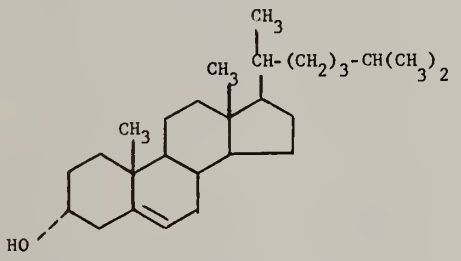
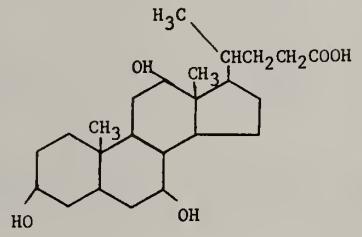
[4342] Commercial.
[4372] Housed in "carcinogen-laden" room.
[4375] 4 sarcomas at 21–23 months.
[4376] 1 sarcoma at 23 months.
[4377] Leiomyosarcoma at 8 months. 54 serial transplants (some metastases).
[4378] Adrenal pathology study.
[4379] Atherosclerosis at 2 months.
[4380] Atherosclerosis.
[4381] 5 non-invasive carcinomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
670. CHOLESTEROL (Continued)								
Gardner, W. U., 1959	30 mice[4382]	BC	F	Unspecified amt. as pellet & dipped in 1% collodion, for avg. 322 d.	Intravaginal insert.	Tumors[4383, 4384]	Mean age 589 d	Up to 668 d.
Hieger, I., 1959	50 mice	C57		Unspecified amt.[4385]	S.C. inj	Tumors[4386]	47 at 12 mos., 22 at 24 mos.	At least 24 mos.
	46 mice[4387]	C57		Unspecified amt.[4342]	S.C. inj	Tumors[4344]	32 at 12 mos., 12 at 24 mos.	At least 24 mos.
	40 mice[4387]	Stock		Unspecified amt.[4342]	S.C. inj	0	19 at 12 mos., 5 at 18 mos.	At least 18 mos.
	172 mice	C57		Unspecified amt.[4385]	S.C. inj	Tumors[4344]	126 at 12 mos., 20 at 24 mos.	At least 24 mos.
	100 mice[4372]	CBA		Unspecified amt.[4342]	S.C. inj	Tumors[4345]	71 at 12 mos., 2 at 24 mos.	At least 24 mos.
	100 mice[4372]	Stock		Unspecified amt.[4342]	S.C. inj	Tumors[4388]	75 at 12 mos., 10 at 24 mos.	At least 24 mos.
	65 mice	Stock		Unspecified amt.[4342]	S.C. inj	Tumors[4386]	57 at 12 mos., 11 at 24 mos.	At least 24 mos.
	70 mice	Stock		Unspecified amt.[4342]	S.C. inj	Tumors[4386]	38 at 12 mos., 2 at 24 mos.	At least 24 mos.
	60 mice	C57		Unspecified amt.[4342]	S.C. inj	Tumors[4333]	28 at 12 mos., 3 at 24 mos.	At least 24 mos.
	34 mice	C57 & Stock		Unspecified amt.[4385]	S.C. inj	Tumors[4333]	18 at 12 mos., 2 at 24 mos.	At least 24 mos.
	40 mice[4389]	Stock		4 times at fortnightly intervals	Inj	0	28 at 12 mos., 2 at 24 mos.	At least 24 mos.
	60 mice[4390]	Stock		4 times unspecified amt	Inj	0	11 at 12 mos	At least 12 mos.
Hieger, I., 1959	50 mice	17 C57, & 33 stock.		10% in 90% olive oil, heated with air for 75 hrs.	S.C. inj	0	35 at 12 mos., 4 at 24 mos.	At least 24 mos.
	50 mice	14 C57, & 36 stock.		10% added to olive oil which was heated with air for 76 hrs.	S.C. inj	Tumors[4333]	38 at 12 mos., 9 at 24 mos.	At least 24 mos.
	108 mice	C57		Unspecified amt.[4342]	S.C. Inj	Tumors[4343]	68 at 12 mos., 10 at 24 mos.	At least 24 mos.

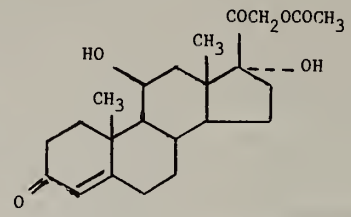
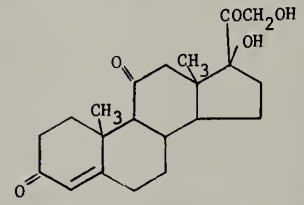
[4333] 1 sarcoma.
[4342] Commercial.
[4343] 10 sarcomas.
[4344] 5 sarcomas.
[4345] 2 sarcomas.
[4372] Housed in "carcinogen-laden" room.
[4382] Mean age at start: 267 days.
[4383] 1 perineal papilloma, 1 vulval epidermoid carcinoma.
[4384] 1/43 untreated controls with anaplastic epidermoid vaginal carcinoma; 2 with uterine reticulum cell sarcomas.
[4385] Pure.
[4386] 3 sarcomas.
[4387] Housed in low temperature room.
[4388] 8 sarcomas.
[4389] Caged in groups of 4 (1 with bi-weekly application of Benzpyrene, 4 months after cholesterol treatment).
[4390] Caged in groups of 4 (1 with bi-weekly application of Benzpyrene for 3 months, begun 2 weeks before treatment).

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
				670. CHOLESTEROL (Continued)				
	45 mice	Stock		Unspecified amt.[4342]	S.C. inj	Tumors[4344]	18 at 12 mos., 3 at 24 mos.	At least 24 mos.
	20 mice	MRC		Unspecified amt.[4342]	S.C. inj	Tumors[4345]	16 at 12 mos., 2 at 24 mos.	At least 24 mos.
	30 mice	C57		Unspecified amt.[4342]	S.C. inj	Tumors[4333]	10 at 12 mos., 5 at 24 mos.	At least 24 mos.
	39 mice	C57		Unspecified amt.[4342]	S.C. inj	Tumors[4386]	24 at 12 mos., 11 at 24 mos.	At least 24 mos.
	75 mice[4372]	C57		Unspecified amt.[4342]	S.C. inj	Tumors[4391]	46 at 12 mos., 3 at 24 mos.	At least 24 mos.
	115 mice[4372]	Stock		Unspecified amt.[4385]	S.C. inj	Tumors[4392]	66 at 12 mos., 10 at 24 mos.	At least 24 mos.
	109 mice	Stock		Unspecified amt.[4385]	S.C. inj	Tumors[4386]	All died in less than 1 yr.	Less than 1 yr.
	53 mice	Stock		Unspecified amt.[4385]	S.C. inj	0	27 at 12 mos., 11 at 18 mos.	At least 18 mos.
	50 mice	C57		Unspecified amt.[4385]	S.C. inj	0	38 at 12 mos., 23 at 24 mos.	At least 24 mos.
	53 mice	Stock		Unspecified amt.[4385]	S.C. inj	0	25 at 12 mos., 2 at 24 mos.	At least 24 mos.
	80 mice[4393]	Stock		10% in olive oil, 11 times at beginning of each mo.	Inj	Tumors[4394]	42 at 12 mos., 16 at 18 mos.	At least 18 mos.
	40 mice[4395]	C57		4 times at fortnightly intervals	Inj	0	30 at 12 mos., 3 at 24 mos.	At least 24 mos.
	40 mice[4395]	Stock		4 times at fortnightly intervals	Inj	Tumors[4345]	30 at 12 mos., 2 at at 24 mos.	At least 24 mos.
	57 mice	Stock		Unspecified amt	S.C	0	25 at 12 mos., 1 at 30 mos.	30 mos.
	50 mice	C57		Unspecified amt	S.C	Tumors[4396]	47 at 12 mos., 7 at 30 mos.	30 mos.

[4333] 1 sarcoma.
[4342] Commercial.
[4344] 5 sarcomas.
[4345] 2 sarcomas.
[4372] Housed in "carcinogen-laden" room.
[4385] Pure.
[4386] 3 sarcomas.
[4391] 4 sarcomas.
[4392] 11 sarcomas.
[4393] Caged in groups of 4 (1 with bi-weekly application of Benzpyrene in 2nd and 3rd week of each month).
[4394] 12 sarcomas.
[4395] Caged in groups of 4 (1 with bi-weekly application of Benzpyrene begun 3 weeks after cholesterol treatment).
[4396] 3 sarcomas at 12, 18 and 24 months.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
671. CHOLESTEROL ISOHEPTYLATE 								
Bischoff, F., 1957	33 mice[198]	Marsh-Buffalo	F	5–15 mg. in sesame oil colloidal soln. or susp. 2 or 3 times, total dose 15–20 mg.	S.C. dorsal	Tumors[4397, 4398]		15 mos.
672. CHOLESTEROL α-OXIDE 								
Bischoff, F., et al., 1955	33 mice[198]		F	Unspecified amt. in sesame oil		Tumors[4399]		
673. CHOLIC ACID 								
Gillman, J., et al., 1954	8 rats	Wistar	M & F	0.5% in the diet	P.O.	0	57–76 d	
	4 rats	Wistar	F	50 mg./d. per rat incorporated in Coward's diet.[4400]	P.O.	0	63–76 d	76 d.
	4 rats	Wistar	M	50 mg./d. per rat incorporated in Coward's diet.[4400]	P.O.	0	57–66 d	66 d.

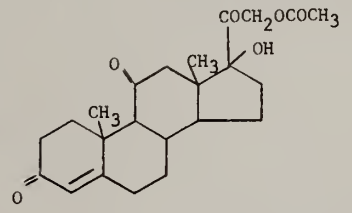
[198] Castrated.
[4397] 30% adenocarcinomas, 6% lymphoid tumors, 9% fibrosarcomas.
[4398] 98 sesame oil controls with 13% adenocarcinomas, 12% lymphoid tumors, 7% fibrosarcomas.
[4399] 43% fibrosarcomas. Sesame oil controls negative.
[4400] Coward's diet: 71% dextrinized corn starch, 15% casein, 10% brewer's yeast, 4% salts.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
				674. CORTISOL ACETATE 				
Bern, H. A., et al., 1958	22 mice[4401]	C3H/HeCrgl	F	0.25 mg. in aqueous susp. daily or 0.5 mg. on alternate d.	S.C	0[4402]	Sacrificed at 3 mos.	3 mos.
Blair, P. B., et al., 1960	24 mice	A/CrGl	F	Avg. daily dose of 250 μg. as aqueous susp. for 1 mo.	S.C	0	Mean age 21.5 ± mos.	Up to 19 mos.
	25 mice	A/CrGl	F	Avg. daily dose of 250 μg. as aqueous susp. for 1 mo.	S.C	0	10 killed at 1 mo., 15 killed at 3½ mos.	3½ mos.
				675. CORTISONE 				
Houssay, B. A., et al., 1954	17 rats[4403]	White	F	150 mg. mixed with 25 mg. of lactose susp. in 0.5 ml. saline (0.9% NaCl); soln. daily treatment for six mos.	S.C	0	All sacrificed at end of experiment.	6 mos.
	17 rats[4403]	White	F	50 mg. mixed with 25 mg. of lactose susp. in 0.5 ml. saline (0.9% NaCl); soln. daily treatment for 6 mos.	S.C	0	All sacrificed at end of experiment.	6 mos.
Shimkin, M. B., 1954	30 mice[4404]	Strain A	F	2.5 mg.[4405]/0.1 cc. water given on 3 consecutive d., repeated 3 times at fortnightly intervals for total dose of 30 mg.	S.C	Tumors[4406]	All survived inj. period.	37 wks.
Stumpf and Wilens, 1954	6 rabbits			30 mg. total in a series of injs. during 84 d.	I.M	0		84 d.
Woolley, G. W., 1954	Mice	C58, C58 x AKR.		1 mg./d. 3 successive d./mo. for life	S.C	Tumors[4407, 4408].		

[4401] Age: 3 months.
[4402] 4 with mammary nodular hyperplasia (less than controls).
[4403] Ovariectomized and partially pancreatectomized.
[4404] Virgin, age 3 months.
[4405] 17-hydroxy-11-dehydrocorticosterone.
[4406] 7/24 with pulmonary tumors (0.29 tumors/mouse).
[4407] Cervical tumors (parotid involvement).
[4408] Controls negative.

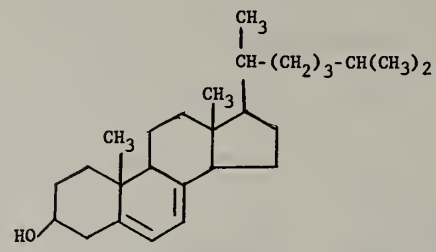
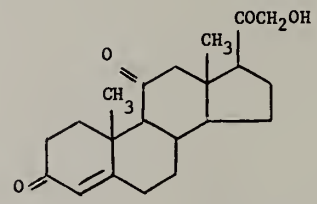
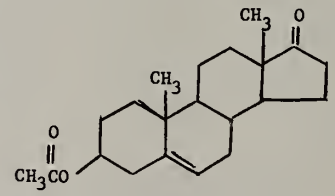
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
675. CORTISONE (Continued)								
Bloodworth, J. M. B., and Hamwi, G. J., 1955.	Rabbits[4409]		M & F	5 or 10 mg./d. for at least 21 d	I.M	0[4410]		130 d. or more.
Farrell, G. L., and Laqueur, G., 1955.	1 dog	Mongrel		100 mg./d. for 71 d	S.C	0[4411]	Sacrificed at 71 d	71 d.
	1 dog	Mongrel		100 mg./d. for 44 d	S.C	0[4411]	Sacrificed at 44 d	44 d.
Tolksdorf, S., et al., 1956	Rats		M	2–4 mg. in saline susp. daily for 19 d., off 3 d., daily again for 8 d.	S.C	0	Killed at intervals	50 d.
Field, J. B., et al., 1959	26 rats	Long-Evans	F	1.25 mg./d. in low-iodine diet for over 18 mos.	P.O	0[4412]		Up to 33 mos.
Gurskii, T., 1959	5 mice	RIII	M	0.25 mg. twice wkly. for 2 mos	I.M	0		At least 2 mos.

676. CORTISONE ACETATE

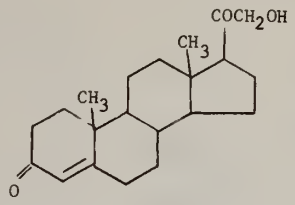
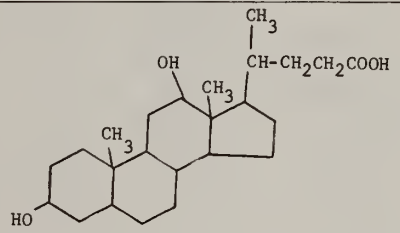
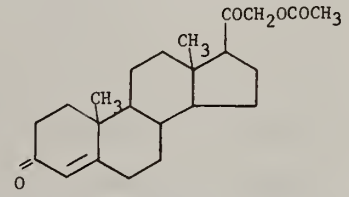


Blivaiss, B. B., et al., 1954	12 rats		F	1 mg. daily for 2 to 4 wks	S.C	0		7 wks.
Bragdon and Dent, 1954	24 salamanders.	Triturus v. Viridescens.		0.17, 0.25 or 0.5 mg./d. in 0.1 ml. saline.	I.P	0[4413]		37 d.
Hirvonen, M., and Räsänen, M. A., 1954.	33 rats		M	0.1 ml. every wk. d	S.C	0[4414]		Up to 78 d.
Wilens, S. L., and Stumpf, H. H., 1955.	6 rabbits[4415]			5 mg./d. for 2 wks., interrupted 2 wks., then 10 mg./d. for 2 wks., interrupted 2 wks., then 15 mg./d. for 2 wks.	I.M	0[4416]	All sacrificed	84 d.
	6 rabbits			5 mg./d. for 2 wks., interrupted 2 wks., then 10 mg./d. for 2 wks., interrupted 2 wks., then 15 mg./d. for 2 wks.[4417]	I.M	0[4418]	1 died, all sacrificed.	84 d.
Ferguson, D. J., 1956	9–20 mice[4419]	C3H	F	25 μg. in saline soln. or susp. twice a d. (total vol. 0.10 ml./d.) 30–38 d. after operation, cont. for 14 d.	S.C	0	All sacrificed	13 mos. or more.
Nicol, T., and Bilbey, D. L. J., 1956.	12 guinea pigs		M	10 mg. daily for 5 wks	I.M	0[4420]		5 wks.

[4409] Adult.
[4410] Glomerular lesions; regressed upon withdrawal of cortisone.
[4411] Pituitary study.
[4412] Thyroid pathology only. 1 nodular thyroid.
[4413] Limb regeneration study.
[4414] Thyroid study.
[4415] Young adult.
[4416] 100% with glomerular lesions.
[4417] Cholesterol (1% of diet) on treatment days.
[4418] Glomerular lesions in all but 1.
[4419] Hypophysectomized and castrated.
[4420] Hematological study.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
677. 7-DEHYDROCHOLESTEROL 								
Hieger, I., 1957	20 mice			15% soln. in lard	S.C	0	2 at 27 mos	27 mos.
678. 11-DEHYDROCORTICOSTERONE 								
Houssay, B. A., et al., 1954	16 rats[4421]	White	F	50 mg. mixed with 25 mg. of lactose susp. in 0.5 ml. saline (0.9% NaCl); soln. daily treatment for 6 mos.	S.C	0	All sacrificed at end of experiment.	6 mos.
679. DEHYDROEPIANDROSTERONE ACETATE 								
Vol'fson, N. I., 1958	15 mice[4422]	C3HA	F	(2) 10 mg. in paraffin and lanolin pellets every mo., alternating on l. and r. side.	S. C. implant	0[4423,4424]	6 at 16 mos	Up to 19 mos.

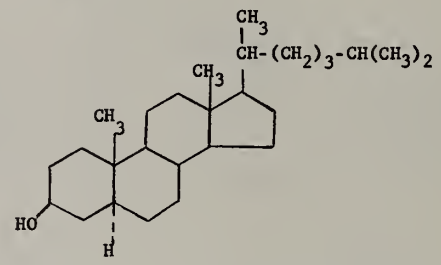
[4421] Ovariectomized and partially pancreatectomized.
[4422] Survivors at 11 months 27 days.
[4423] 9/15 (60%) with mammary tumor (2 with pulmonary metastases).
[4424] 11/19 (57.9%) paraffin-lanolin pellet controls with mammary tumors (3 with pulmonary metastases).

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
680. DESOXYCORTICOSTERONE 								
Eränko, O., and Niemi, M., 1955.	13 rats[4426]	Wistar-Albino	M	100 mg. broken pellet implanted in r. kidney, 1% NaCl for drinking water.	I.P	0	4 died	10 wks.
681. DESOXYCHOLIC ACID[4426] 								
Salaman and Roe, 1956	20 mice	Albino "S" strain.		10 thrice wkly. applications of 2.25% soln. in methanol (total dose—67.5 mg.).[4427]	Skin	7 (Total of 14 pap.)	20 at 25 wks	Approx. 27 wks.
Hieger, I., 1957	73 mice			1% susp. in olive oil and tristearin 5:1.	S.C	Tumors[4428]	1 at 27 mos	27 mos.
682. DESOXYCORTICOSTERONE ACETATE 								
Mirand, E. A., et al., 1953	24 mice	Marsh-Albino	M & F	0.2 mg./0.1 cc. in sesame oil daily except Sat. & Sun. for 3 mos.	S.C	Tumors[4429, 4430]	4 died early, 1 killed at 6 mos.	9 mos.
Houssay, B. A., et al., 1954	12 rats[4421]	White	F	100 mg. mixed with 25 mg. of lactose susp. in 0.5 ml. saline (0.9% NaCl); soln. daily treatment for 6 mos.	S.C	0	All sacrificed at end of experiment.	6 mos.

[4421] Ovariectomized and partially pancreatectomized.
[4425] Unilateral nephrectomy.
[4426] Deoxycholic acid.
[4427] Weekly croton oil in acetone applications; 2 of 0.085%, 16 of 0.17%, begun 25 days after first treatment.
[4428] 1 C57 male with sarcoma at 21 months.
[4429] 9 with malignant tumors (3 myosarcomas, 6 fibrosarcomas) at 9 months. 10 survivors with tumors.
[4430] Experiment still in progress.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
682. DESOXYCORTICOSTERONE ACETATE (Continued)								
Mirand, E. A., et al., 1954	Mice	Marsh		0.2 mg./0.1 cc. in sesame oil for 1, 2 and 3 mos.	S.C	Tumors[4431, 4432]		Up to 3 mos.
Salgado, E., 1954	11 rats[4425]	Sprague-Dawley.	M	20 mg. pellet each of first 3 wks	S.C	0[4433]	9 died	60 d.
	12 rats[4434]	Sprague-Dawley.	M	20 mg. pellet each of first 3 wks	S.C	0[4435]	3 died	60 d.
	35 rats[4436]	Sprague-Dawley.	M	20 mg. pellet each of first 3 wks	S.C	0[4437]	30 at 4 wks	$6\frac{1}{2}$ wks.
	48 rats[4438]	Sprague-Dawley.	M	20 mg. pellet each of first 3 wks	S.C	0[4433]	40 at 39 d	62 d.
Selye, H., 1955	10 rats[4439]	Sprague-Dawley.	F	200 μg. in 0.1 ml. sesame oil/d. for 30 d.	S.C	0[4440]	All sacrificed	31 d.
Symeonidis, A., et al., 1955	18 rats[4441]	Osborne-Mendel.	M	Set of (4) 16 mg. pellets[4442] every 4 wks. for 6 times, total of 384 mg.	S.C. implant (back).	0	Killed from 0–14 d. after operation.	30 wks.
Kirkman, H., 1959	8 hamsters	Syrian	M	20 mg. pellet	Subpannicular implant.	0	250–399 d	399 d.

683. DIHYDROCHOLESTEROL



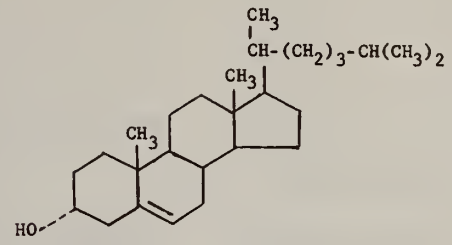
Nichols, C. W., Jr., et al., 1955	12 cockerels	White Leghorn		0.5% in diet with 2.5% cotton seed oil for 6 mos.	P.O	0[4443, 4444]	All sacrificed	6 mos.
Bevans, M., and Mosbach, E., 1956.	3 rabbits	Chinchilla	M	0.25% in stock diet plus 12% olive oil for 6 wks.	P.O	0[4445]	All sacrificed	6 wks.
	6 rabbits	Chinchilla	M	0.5% in stock diet plus 12% olive oil for 6 wks.	P.O	0[4445]	All sacrificed	6 wks.

[4425] Unilateral nephrectomy.
[4431] Transplantable injection site myosarcomas or fibrosarcomas. Females with uterine and cervical fibrosarcomas.
[4432] Non-treated and sesameoil controls negative.
[4433] Nephrosclerosis, myocarditis and periarteritis.
[4434] Unilateral nephrectomy and thyroidectomy.
[4435] 1 cardiac lesion. Mesenteric and pancreatic vessel lesions.
[4436] Unilateral nephrectomy. 10 thyroidectomized at 4 weeks.
[4437] Periarteritis nodosa.
[4438] Unilateral nephrectomy. 15 thyroidectomized at 39 days.
[4439] Unilateral nephrectomy. Water with 1% NaCl.
[4440] Mesenteric periarteritis nodosa.
[4441] Hepatectomy 28 weeks after first implants.
[4442] Pure crystalline.
[4443] Aortic and hepatic lesions.
[4444] 2.5% cottonseed oil controls with aortic lesions.
[4445] Cholangitis and cholecystic calculi.

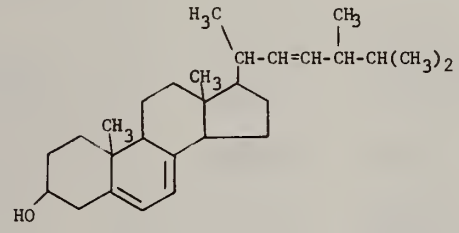
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment

687. EPICHOLESTEROL

SEE UNDER 6β-HYDROXY-4-CHOLESTEN-3-ONE

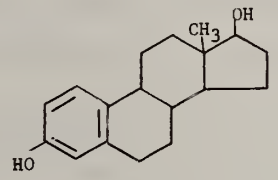


688. ERGOSTEROL



Hieger, I., 1957	10 mice			15% soln. in lard	S.C	0	3 at 18 mos	18 mos.

689. ESTRADIOL



Ranadive, K. J., 1953	Mice[4458]	C3H, C57 Black.	F	0.9 mg. pellets	S.C. subscapular.	0[4459]		About 6 mos.
Silver, M., 1953–54	Rats	Hooded-Norway.	F	0.175 μg/ml. arachis oil every 2 d. up to 60 d.[4460]	S.C	0	Killed at intervals	60 d.
Lockhart, L. H., and Finerty, J. C., 1955.	30 rats[4461]		F	0.1 microgram started on 16th postoperative d. and given for 16 consecutive d.	S.C	No details	All sacrificed	32 d.

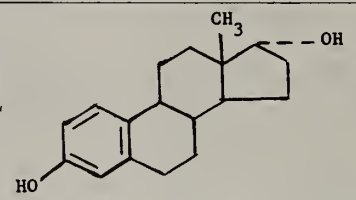
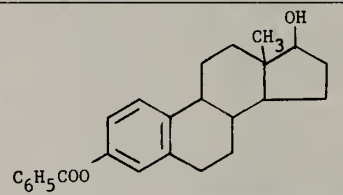
[4458] Ovariectomized, foster nursed.
[4459] 42 observed for mammary and urogenital changes.
[4460] Ovariectomized 10 days before treatment.
[4461] Young, ovariectomized at age 25 days.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
689. ESTRADIOL (Continued)								
Mackenzie, 1955	29 rats	WAG[4462]	F	2 pellets of the compressed crystalline substance weighing 5–6 mg; first at 4 wks. of age; second 1–3 mos. later.[4463]	Implantation into the muscles of the lumbar region (1 on ea. side).	10[4464] (22%).	Kept under observation until natural death occurred.	Last died at about 422 d.
	38 rats	Albino[4465]	F	2 pellets of the compressed crystalline substance weighing 5–6 mg.; first at 4 wks. of age; second 1–3 mos. later.[4463]	Implantation into the muscles of the lumbar region (1 on ea. side).	2 mammary carc.	Kept under observation until natural death.	Last died about 400 d.
	25 rats	New castle black & white (hooded)[4466].	F	2 pellets of compressed crystaline substance weighing 5–6 mg.; first, at 4 wks. of age; second, 1–3 mos. later.[4463]	Implantation into the muscles of the lumbar reg. (1 on ea. side).	6[4467] mammary carc.	Kept under observation until natural death.	Last died after about 350 d.
Rudali, G., et al., 1956	20 mice (2.5 mos. old).	NLC	M	7–10 mg. cholesterol pellet with 5% estradiol.	S.C	Tumors[4468]	11 at 120 d	1 year
Segal, S. J., and Thompson, C. R., 1956.	16 rats	Sprague-Dawley.	M	6.4 μg./0.2 cc. olive oil for 30 d	S.C	0	All sacrificed	30 d.
	16 rats	Sprague-Dawley.	M	3.2 μg./0.1 cc. olive oil for 30 d	S.C	0	All sacrificed	30 d.
Kirkman, H., and Wurster, D. H., 1957.	16 hamsters.[4469]	Syrian	F	20 mg. pellets	S.C	Tumors[4470]		250 d.
	14 hamsters	Syrian	M	20 mg. pellets	S.C	Tumors[4471]		250 d.
Westberg, J. A., et al., 1957	20 mice	BALB/c	10 ♂♂	3 mg. pellet implant	S.C. middorsal region.	0[4472]		30 d.
	20 mice	C57BL	10 ♂♂	3 mg. pellet implant	S.C. middorsal region.	0[4472]		30 d.
	21 mice	C3H/He	11 M, 10 F	3 mg. pellet implant	S.C. middorsal region.	0[4472]		30 d.
	21 mice	A/He	11 M, 10 F	3 mg. pellet implant	S.C. middorsal region.	0[4472]		30 d.
	19 mice	BALB/c x C3H	10 M, 9 F	3 mg. pellet implant	S.C. middorsal region.	0[4472]		30 d.
	27 mice	C3H x BALB/c	8 M, 19 F	3 mg. pellet implant	S.C. middorsal region.	0[4472]		30 d.
	18 mice	A x BALB/c	9 ♂♂	3 mg. pellet implant	S.C. middorsal region.	0[4472]		30 d.

[4462] Derived from Wistar albino strain; spontaneous mammary cancer extremely rare.
[4463] Some received estradiol dipropionate, some estradiol; no observed difference.
[4464] Mammary carcinomas. 1 with precancerous mammary lesion.
[4465] From Royal Cancer Hospital, London. Originally from commercial source. Spontaneous mammary carcinoma never reported.
[4466] Low to moderate spontaneous mammary tumor occurrence.
[4467] 2 animals with precancerous mammary lesion; 1 with benign mammary tumor.
[4468] 2 mammary tumors.
[4469] Ovariectomized.
[4470] 10 with malignant renal tumors.
[4471] 14 with malignant renal tumors.
[4472] Adrenal pathology only.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
				689. ESTRADIOL (Continued)				
	25 mice	BALB/c x A	13 M, 12 F	3 mg. pellet implant	S.C. middorsal region.	0[4472]		30 d.
	24 mice	C57 x C3H	8 M, 16 F	3 mg. pellet implant	S.C. middorsal region.	0[4472]		30 d.
	19 mice	C3H x C57	9 M, 10 F	3 mg. pellet implant	S.C. middorsal region.	0[4472]		30 d.
Bern, H. A., et al., 1958	14 mice[4401]	C3H/He Crgl	F	4 mg. ±0.5 mg. pellet, second pellet implanted 2 mos. later.	S.C.	Tumors[4473, 4474]	Sacrificed at 3 mos.	3 mos.
Geschickter, C. F., and Hartman, C. G., 1959.	1 monkey	Rhesus	F	800 mg. powder, (5) 3 mg. pellets wkly., total 99 mg., (3) 3 mg. pellets wkly., total 54 mg. and 1 cc. of 30,000 rat U. in oil thrice wkly. total 720,000 rat U., all given simultaneously.	S.C. and I.M.	0	Died after 2⅓ mos.	2⅓ mos.
	1 monkey[198]	Rhesus	F	(5) 3 mg. pellets wkly., total 276 mg. and 1 cc. of 30,000 rat U. in oil thrice wkly., total 3,810,000 rat U., both given simultaneously.	S.C. and I.M.	0	Killed after 15 mos.	15 mos.
	1 monkey[198]	Rhesus	F	Total of 378 mg. as pellets, 800 mg. as powder and 3,498,000 rat U. in oil, all in varying doses.	S.C. and I.M.	0		2 yrs.
	1 monkey[198]	Rhesus	F	(5) 3 mg. pellets and (2) 3 mg. pellets, total 141 mg. and 1 cc. of 30,000 rat U. in oil thrice wkly., total 1,800,000 rat U., both given simultaneously.	S.C. and I.M.	0	Died after 5 mos.	5 mos.
	1 monkey[198]	Rhesus	F	(5) 3 mg. pellets and (1) 2 mg. pellet, total 141 mg., and 1 cc. of 30,000 rat U. λ thrice wkly., total 1,770,000 rat U., all given simultaneously in oil.	S.C. and I.M.	0	Died after 5 mos.	5 mos.
Geschickter, C. F., and Hartman, C. G., 1959.	1 monkey	Rhesus	F	(5) 3 mg. pellets wkly., total 300 mg. and 1 cc. of 30,000 rat U. in oil thrice wkly., total 4,110,000 rat U., both given simultaneously.	S.C. and I.M.	0	Died after 16 mos.	16 mos.
Kirkman, H., 1959	15 hamsters	Syrian	M	20 mg. pellets for 286–514 d	Subpannicular implant.	Tumors[4475, 4476]		At least 514 d.
	12 hamsters.[4477]	Syrian	M	20 mg. pellets every 150 d., 267–329 d.	Subpannicular implant.	Tumors[4478, 4479]		At least 329 d.
	6 hamsters	Syrian	F	20 mg. pellets, 241–363 d. duration	Subpannicular implant.	0		363 d.

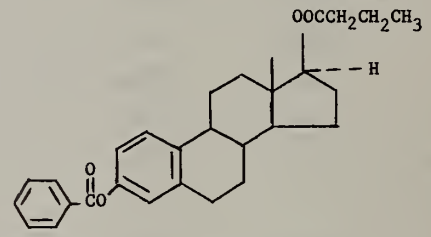
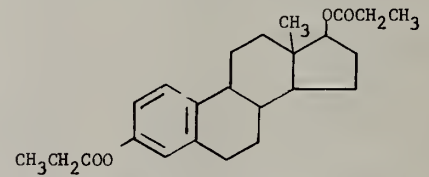
[198] Castrated.
[4401] Age: 3 months.
[4472] Adrenal pathology only.
[4473] 6 with mammary tumors, 14 with hyperplastic mammary nodules (avg. 61/mouse).
[4474] Of 30 untreated controls, 3 with mammary tumors, 16 with hyperplastic mammary nodules (avg. 2.6/mouse).
[4475] 100% with malignant renal tumors (6 with metastases).
[4476] 61 untreated controls negative.
[4477] Orchiectomized at approximate age 31 days.
[4478] 100% with malignant renal tumors.
[4479] 60 untreated castrated controls negative.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
689. ESTRADIOL (Continued)								
	16 hamsters.[4469]	Syrian	F	20 mg. pellet once	Subpannicular implant.	Tumors[4480, 4481].		At least 354 d.
Blair, P. B., et al., 1960	23 mice	A/Cr Gl	F	3–4 mg. pellet, 2nd pellet 2 mos. later, total 3½ mos. treatment.	S.C implant in in dorsum.	Tumors[4482]	Tumor-bearing mean age 10.9± mos.	At least 18½ mos.
	14 mice	A/Cr Gl	F	3–4 mg. pellet, 2nd pellet 2 mos. later, total 3½ mos. treatment.	S.C. implant in dorsum.	0[4483]	Sacrificed at 3½ mos.	3½ mos.
690. α-ESTRADIOL 								
Bacon, R. L., and Kirkman, H., 1955.	Hamsters		M	20 mg. compressed pellet implanted up to 514 d. or more.	S.C. implant	0[4484]		At least 514 d.
Cassano, C., 1955	15 guinea pigs		F	One pellet 20 mg. mixed with 10 mg. lactose.	S.C	Tumors[4485]		100 d.
	60 guinea pigs.[4486]		F	20 mg. pellet, 15 castrated and 15 intact guinea pigs received also injs. of a spleen extract.	S.C	Tumors[4487]	Sacrificed at 100 d.	100 d.
Steinberger, E., and Nelson, W.O., 1955.	5 rats[4409]	Long-Evans	M	200 μg. daily for 30 d	S.C	0[4488]	All sacrificed	30 d.
Ferguson, D. J., 1956	9–20 mice[4489]	C3H	F	0.01 μg. in oil once a d. (total vol. 0.03 ml/d.) 30–38 d. after operation, cont. for 14 d.	S.C	0	All sacrificed	13 mos. or more.
691. ESTRADIOL BENZOATE 								
Gillman, J., et al., 1954	32 rats	Wistar	M	4–8 mg. pellets implanted after being fed Coward's diet[4400] for 30 d., diet cont. after implant.	S.C	0	50–122 d	122 d.

[4400] Coward's diet: 71% dextrinized corn starch, 15% casein, 10% brewer's yeast, 4% salts.
[4409] Adult.
[4469] Ovariectomized.
[4480] 10 with malignant renal tumors.
[4481] 12 untreated ovariectomized controls negative.
[4482] 11 with mammary carcinoma. 39 untreated controls negative at 18½ months.
[4483] 7 with hyperplastic mammary nodules. 25 untreated controls negative at 3½ months.
[4484] 1 with Sertoli cell hyperplasia (possibly neoplastic).
[4485] 11 uterine and mesenteric fibromas.
[4486] 30 castrated.
[4487] Uterine fibromyoma. Spleen extract treated group developed fewer tumors.
[4488] No pathology noted.
[4489] Hypophysectomized and castrated.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
691. ESTRADIOL BENZOATE (Continued)								
	9 rats	Wistar	M	4–8 mg. pellets implanted, fed stock diet.[4490]	P.O	0	168–186 d	186 d.
	28 rats	Wistar	F	4–8 mg. pellets implanted, fed Coward's diet.[4400]	S.C	0	57–122 d	122 d.
	10 rats	Wistar	F	4–8 mg. pellets implanted, fed stock diet.[4490]	P.O	0	1 sacrificed at wkly. intervals.	70 d.
	60 rats	Wistar	M & F	4–8 mg. pellet	S.C	0	50–122 d	
	15 rats	Wistar	M & F	4–8 mg. pellet	S.C	0	51–90 d	
	19 rats	Wistar	M & F	4–8 mg. pellet	S.C	0	70–186 d	
Olivi, M., and Consolandi, G., 1955.	103 mice[4491]	C+	F	0.05 mg. as 0.1% soln. in oil, wkly	S.C	Tumors[4492]	Sacrificed at development of mammary tumor.	Up to 1 yr.
Gardner and Ferrigno, 1956	Mice[4493]	BC	F	16.6 μg. in 0.05 cc. sesame oil, wkly. for an avg. of 31 wks.	S.C	5[4494]	First died at 112 d.	Last died at 311 d.
Olivi, M., et al., 1956	60 rats[4495]	Albino	M & F	0.2 mg. and 0.5 mg. of progesterone in oil, repeatedly.	S.C	Tumors[4496]	Early death of 65% for toxic effect.	15 mos.
Gitlin, G., 1957	15 rats	White	F	2.2–11.7 mg. absorbed, as pellets	S.C. l. inguinal region.	0[4497]	Killed from 28–192 d.	192 d.
Lavedan, J. P., 1957	Guinea pigs		F	15 to 90 mg. wkly	S.C	0		6 mos.
Angrist, A., et al., 1959	Rats			0.5 mg. thrice wkly., some deprived of Vit. A.	I.M	0[4498]		About 12 wks.
Angrist, A., et al., 1960	11 rats	Sprague-Dawley.	5 M, 6 F	0.05 mg. in oil thrice wkly. till death.	Inj	0[4499]	6 for path. study	9 mos.
	7 rats	Sprague-Dawley.	4 M, 3 F	0.05 mg. in oil thrice wkly. till death.[4500]	Inj	0[4501]	3 at 36 wks	38 wks.
	15 rats	Sprague-Dawley.	7 M, 8 F	0.05 mg. in oil thrice wkly. till death, fed Vit. A deficient diet 3 to 4 wks. prior to treatment.	Inj	0[4502]	11 for path. study	17½ wks.
	19 rats	Sprague-Dawley.	8 M, 11 F	0.05 mg. in oil thrice wkly. till death, fed Vit. A. deficient diet 3–4 wks. prior to treatment.[4503]	Inj	0[4504]	13 for path. study	11 wks.

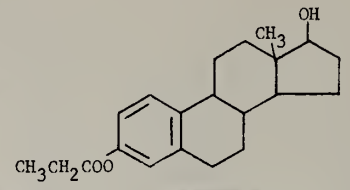
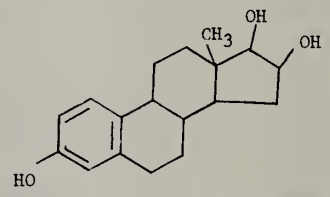
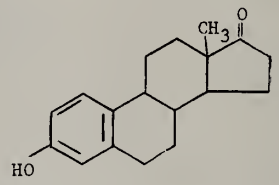
[4490] Stock diet: 48% flour, 20% dried skimmed milk, 17.2% Mealie meal, 2.6% brewer's yeast, 1.7% salts, 6.0% fats, 2.0% raw linseed oil, 2.0% vitaminized oil.
[4491] 15 females and 88 males (36 castrated) survived.
[4492] 15 females, 42 intact males and 21 castrated males with mammary carcinoma.
[4493] 100% para I to para V. Only uterine lesions (approximately 5%) reported.
[4494] All 5 with multiple subserosal lesions (possible endometrial carcinoma): 3 with infiltrative uterocervical tumors, 1 with invasive carcinoma, 1 with mammary adenocarcinoma.
[4495] 17 males, 43 females, castrated at 21 days. Treatment started at 28 days.
[4495] Two females, one male with mammary carcinoma (total dose 11.5–14.2 mg. of estradiol and 7–20 mg. of progesterone). 63% with pituitary chromophobe adenomas.
[4497] 5 with uterine squamous metaplasia.
[4498] Urinary cystic metaplasia.
[4499] 2 with urinary cystic epithelial hyperplasia.
[4500] Urinary cystic paraffin pellet implant 1–2 weeks before treatment.
[4501] 3 with urinary cystic hyperplasia at 36 weeks.
[4502] 2 females with urinary cystic hyperplasia and papillary projections.
[4503] Urinary cystic rough glass bead implant 1–2 weeks before treatment.
[4504] 12 with urinary cystic hyperplasia and papillary projections.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
691. ESTRADIOL BENZOATE (Continued)								
	8 rats	Sprague-Dawley.	4 F, 4 M	0.05 mg. in oil thrice wkly. till death, fed Vit. A. deficient diet 4 wks. prior to treatment.[4505]	Inj	0[4506]		18 wks.
	4 rats	Sprague-Dawley.	2 M, 2 F	0.05 mg. in oil thrice wkly. till death.[4507]	Inj	0	2 for path. study	7 wks.
692. ESTRADIOL-3-BENZOATE-n-BUTYRATE 								
Coxon, R. V., et al., 1956	8 rats[4508]	Hooded	M	Dissolved in sesame oil, 30 μg. at 1st & 3rd d., 40 μg. at 29th d.	S.C	0[4509]		56 d.
	8 rats	Hooded	M	Dissolved in sesame oil, 30 μg. at 1st and 3rd d., 40 μg. at 29th d.	S.C	0[4509]		56 d.
693. ESTRADIOL DIPROPIONATE 								
Silver, M., 1953–54	20 rats	Hooded-Norway.	F	1.0 μg./ml. arachis oil every 2 d. up to 60 d.[4460]	S.C	0	Killed at intervals	60 d.
	20 rats	Hooded-Norway.	F	0.25 μg./ml. arachis oil every 2 d. up to 60 d.[4460]	S.C	0	Killed at intervals	60 d.
	20 rats	Hooded-Norway.	F	0.075 μg./ml. arachis oil every 2 d. up to 60 d.[4460]	S.C	0	Killed at intervals	60 d.
	20 rats	Hooded-Norway.	F	0.05 μg./ml. arachis oil every 2 d. up to 60 d.[4460]	S.C	0	Killed at intervals	60 d.
	21 rats	Hooded-Norway.	M	1.0 μg./ml. arachis oil every 2 d. up to 60 d.[4510]	S.C	0		60 d.

[4460] Ovariectomized 10 days before treatment.
[4505] Urinary cystic paraffin pellet implant 1 week after estradiol treatment.
[4506] 3 with urinary cystic hyperplasia and epidermoid cysts.
[4507] Urinary cystic rough glass bead implant 2 weeks before treatment.
[4508] Castrated 3 months before treatment.
[4509] Hepatic and renal pathology study.
[4510] Castrated 10 days before treatment.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
693. ESTRADIOL DIPROPIONATE (Continued)								
	21 rats	Hooded-Norway.	M	0.25 μg./ml. arachis oil every 2 d. up to 60 d.[4510]	S.C	0		60 d.
	18 rats	Hooded-Norway.	M	0.075 μg./ml. arachis oil every 2 d. up to 60 d.[4510]	S.C	0		60 d.
	Rats	Hooded-Norway.	M	0.05 μg./ml. arachis oil every 2 d. up to 60 d.[4510]	S.C	0		60 d.
	20 rats	Hooded-Norway.	F	0.1 μg. in arachis oil every 2 d. rising by 0.1 μg. every 2 d. for every 10 g. increase in body wt.[4460] up to 60 d.	S.C	0	Killed at intervals	60 d.
Jull, J. W., 1956	Mice[4511]	CBA	M	Fixed dose given for 12 wks		0[4512]	All sacrificed at 12 wks.	12 wks.
Bo, W. J., 1957	10 rats	Wistar	F	2 mg. once	S.C	0[4513]	5 killed at 33 and 5 at 39 d.	33 and 39 d.
	10 rats[4514]	Wistar	F	2.0 mg. once a wk	S.C	0[4515]	5 killed at 33 d., 5 killed at 39 d.	39 d.
	30 rats[4459]	Wistar	F	1 μg. every 3rd d., fed Vit. A deficient diet.	S.C	0[4513]	Sacrificed 5th–10th wk.	10 wks.
	30 rats[4459]	Wistar	F	1 μg. every 3rd d., fed Vit. A supplemented diet.	S.C	0	Sacrificed 5th–10th wk.	10 wks.
Bo, W. J., 1958	30 rats[4459]	Wistar	F	1μg. every 3rd d., fed Vit. A supplemented diet.			Killed from 5th–10th wk.	Up to 10 wks.
	30 rats[4459]	Wistar	F	1μg. every 3rd d., fed Vit. A deficient diet.		([4515])	Killed from 5th–10th wk.	Up to 10 wks.
	10 rats[4514]	Wistar	F	2 mg. once wkly	S.C	([4517])	5 killed at 33 and 39 d. resp.	39 d.
Kawamoto, S., et al., 1958	Mice[198]	(C57BL x C3H) F_1.		25 μg. in oil wkly	S.C	Tumors[4518, 4519, 4520].		
	Mice[198]	C57BL		25 μg. in oil wkly	S.C	Tumors[4520, 4521, 4522].		About 150 d.

[198] Castrated.
[4510] Castrated 10 days before treatment.
[4460] Ovariectomized 10 days before treatment.
[4459] Ovariectomized.
[4511] Castrated 2 weeks before treatment.
[4512] Mammary gland growth.
[4513] Uterine squamous metaplasia.
[4514] Age: 7 days.
[4515] 6 with uterine squamous metaplasia. Direct effect of estrogen.
[4515] Keratinizing uterine metaplasia.
[4517] 6 with uterine squamous metaplasia.
[4518] 8/28 (28.6%) with leukemia.
[4519] 4/46 (8.7%) untreated female controls with leukemia. 4/64 (6.3%) untreated male controls with leukemia.
[4520] Leukemia study only.
[4521] 2/30 (6.6%) with leukemia.
[4522] 13/148 (8.7%) untreated female controls with leukemia. 4/157 (2.5%) untreated male controls with leukemia.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
694. ESTRADIOL PROPIONATE[4523] 								
Mirand, E. A., 1956	36 rats	Wistar		5.0 mg. in cottonseed oil every wk. for 365 d.	S.C	0[4524]		365 d.
	18 rats	Sprague-Dawley.		5.0 mg. in cottonseed oil every wk. for 60–90 d.	S.C	0[4524]		90 d.
695. ESTRIOL 								
Kirkman, H., 1959	11 hamsters	Syrian	M	20 mg. pellets for avg. 513 d	Subpannicular implant.	Tumors[4525]		Up to 601 d.
696. ESTRONE 								
Daane, T. A., and Lyons, W. R., 1954.	20 mice[4526]	C3H	M	0.5 μg. in 0.05 cc. sesame oil 10 d., 2.5 μg. from 11–45th d.	S.C	0[4527]	10 sacrificed by 45th d.	1 yr.
Bacon, R. L., and Kirkman, H., 1955.	Hamsters		M	20 mg. compressed pellet implanted at least 404 d.	S.C. implant	0[4528]		At least 404 d.
Crelin, E. S., and Haines, A. L., 1955.	34 mice	Brown-belt	18 M, 16 F	1–2 mg[4529] implanted 30 d	Implanted at pubic symphysis and knee.	0	All sacrified at 30 d.	30 d.
Chalmers, J. G., and Pullinger, B. D., 1956.	26 mice	R111F	M	Approx. 10 mg. pellet coated with wax.	Bladder implant.	0	16 at 25 wks	10 mos.

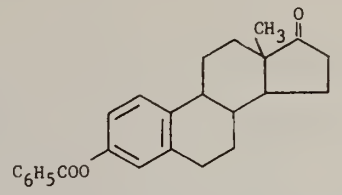
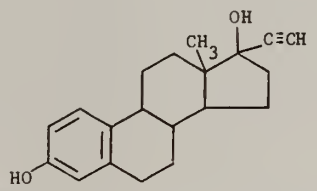
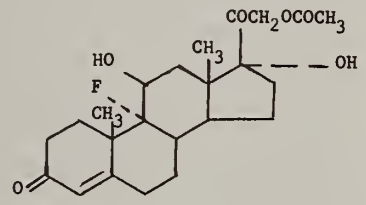
[4523] As depo-Estradiol-propionate.
[4524] Prostatic squamous cell metaplasia.
[4525] 6 with malignant renal tumors.
[4526] Castrated at age 6 weeks.
[4527] 1 hyperplastic mammary nodule.
[4528] Interstitial hyperplasia.
[4529] Powdered, dissolved in ether-alcohol, evaporated into thin sheets.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
696. ESTRONE (Continued)								
Myhre, E., 1956	80 rats		40 M, 40 F	100 μg. daily from 7th d. before operation[4530] to 30th d. after operation.	S.C	0[4531]	Killed at various intervals.	Up to 180 d.
Pullinger, B. D., 1957	10 mice[4532]	R111f	F	0.15 mg. in 0.05 ml. acetone soln. wkly. for 10–16 mos.	Skin	Tumors[4533]		Up to 16 mos.
	17 mice[4534]	R111f	F	0.15 mg. in 0.05 ml. acetone soln. wkly. for 10–16 mos.	Skin	Tumors[4535]		Up to 16 mos.
	20 mice[4534]	R111f	F	0.285–0.30 mg. in 0.05 ml. acetone soln. wkly. for 2–16 mos.	Skin	Tumors[4536]		Up to 16 mos.
	24 mice[4537]	R111f	F	0.1–0.15 mg. in 0.05 ml. acetone soln. wkly. for 10–16 mos.	Skin	Tumors[4538]		Up to 16 mos.
Feldman, J. D., 1958	Rats		F	60 μg. once every 2 wks., fed low iodine content diet.	S.C	0[4539]	Killed at 7, 10½, 13 & 17 mos.	17 mos.
	Rats		F	10 μg. thrice wkly. for total 0.9–2.19 mg., fed low iodine content diet.	S.C	0[4539]	Killed at 7, 10½, 13 & 17 mos.	17 mos.
	15 rats		F	50 μg. every 2–3 wks., later given biwkly., total of 23 injs. on diet containing 4.3 μg. KI/g. diet.	S.C	0[4540]		
	15 rats		F	10 μg. daily for 15½ mos., off for periods of 11, 20, 4 and 39 d., on diet containing 4.3 μg. KI/g. diet.	S.C	0[4540]		15½ mos.
Kendrey, G., et al., 1958	30 mice (25–30 g.).	Albino	M & F	In olive oil 0.1 ml. (1000 I.E.) 6 times in 32 d.	I.P	Tumors[4541]		8 mos.
Gardner, W. U., 1959	19 mice[4542]	BC	F	Approx. 3½ mg. pellet dipped in 1% collodion, for avg. of 269 d.	Intravaginal insert.	Tumors[4543, 4544]	Mean age 615 d	Up to 551 d.
Geschickter, C. F., and Hartman, C. G., 1959.	1 monkey	Rhesus	F	As pellets, total 234 mg. and total of 1,415,000 I.U. in oil given in varying doses.	S.C. and I.M	0	Died after 17 mos.	About 17 mos.
	1 monkey[198]	Rhesus	F	(2) 3 mg. pellets wkly., total 54 mg. and 1 cc. of 10,000 I.U. in oil thrice wkly., total 330,000 I.U., both given simultaneously.	S.C. and I.M	0		2½ mos.
	1 monkey	Rhesus	F	(2) 3 mg. pellets wkly., total 162 mg. and 1 cc. of 10,000 I.U. in oil thrice wkly., total 630,000 I.U. both given simultaneously.	S.C. and I.M	0	Killed after 5 mos.	5 mos.

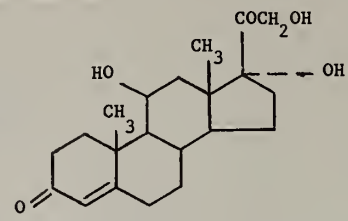
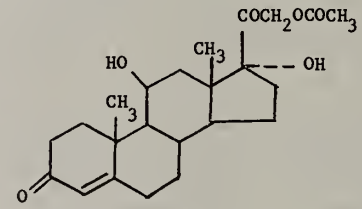
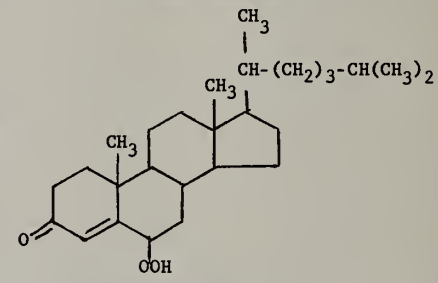
[198] Castrated.
[4530] Gastric defect created (excision of area of anterior fundic wall).
[4531] Gastric mucosal lesion healed.
[4532] Ovariectomized at age 5–7 mos.
[4533] 1 acinar mammary adenoma. Untreated controls negative.
[4534] Ovariectomized at age 2 mos.
[4535] 2 acinar mammary adenomas. Untreated controls negative.
[4536] 3 acinar, 1 active squamous-mixed mammary adenoma. Untreated controls negative.
[4537] Ovariectomized at age 9–11 mos.
[4538] 9 acinar mammary adenomas, 3 active squamous-mixed mammary adenomas, 1 mammary carcinoma. Untreated controls with 4 acinar mammary adenomas.
[4539] Thyroid nodules and tumors (probably neoplastic).
[4540] Thyroid hyperplasia and nodules.
[4541] 13% pulmonary adenomas.
[4542] Started at mean age 346 days.
[4543] 2 with pituitary chromophobe adenomas. Extensive uterine squamous metaplasia (1 cervicovaginal spindle cell sarcoma).
[4544] 12 collodion controls negative.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
				696. ESTRONE (Continued)				
	1 monkey[198]	Rhesus	F	(2) 3 mg. pellets wkly., total 48 mg. and 1 cc. of 10,000 I.U. in oil thrice wkly., total 320,000 I.U., both given simultaneously.	S.C. and I.M.	0	Died after 2½ mos.	2½ mos.
Kirkman, H., 1959	8 hamsters	Syrian	M	20 mg. pellets for avg. 465 d	Subpannicular implant.	Tumors[4545]		Up to 602 d.
	10 hamsters[198]	Syrian	M	20 mg. pellets for avg. 409 d	Subpannicular implant.	Tumors[4546]		Up to 416 d.
	8 hamsters	Syrian	M	20 mg. pellets for 372–602 d	Subpannicular implant.	Tumors[4547, 4548]		At least 602 d.
	10 hamsters.[4549]	Syrian	M	20 mg. pellets every 150 d., 359–416 d.	Subpannicular implant.	Tumors[4550, 4551]		At least 416 d.
	1 hamster	Syrian	F	20 mg. pellets for 345 d	Subpannicular implant.	0		345 d.
Mühlbock, O., and Boot, L. M., 1959.	63 mice[4552]	(O_{20} x DBA_f) F_1.	M	2 mg./liter of water	P.O	Tumors[4553]	434 avg. mice with tumors & 485 avg. mice without tumors.	About 443 d.
	17 mice[4552]	(C57BL x DBA_f) F_1	M	2 mg./liter of water	P.O	0	425 d. avg. in mice without tumors.	About 383 d.
	31 mice[4552]	WLL_f	M	2 mg./liter of water	P.O	0	497 d. in mice avg. without tumors.	About 455 d.
	170 mice[4552]	$C3H_f$	M	2 mg./liter of water	P.O	Tumors[4554]	Avg. age 320 d. with tumors & 341 without tumors.	About 300 d.
	28 mice[4552]	C57BL	M	2 mg./liter of water	P.O	0	412 in mice without tumors.	About 370 d.
	36 mice[4552]	O_{20}	M	2 mg./liter of water	P.O	0	558 d. in mice without tumors.	About 516 d.
	24 mice[4552]	CBA	M	2 mg./liter of water	P.O	0	510 d. in mice without tumors.	About 468 d.
Pullinger, B. D., 1959	39 mice[4555]	C3Hf	F	5 μg. in acetone soln. once wkly. for 60 wks.	Skin	0[4556, 4557]	34 at 1 yr	60 wks.

[198] Castrated.
[4545] 7 with malignant renal tumors.
[4546] 9 with malignant renal tumors.
[4547] 7 malignant renal tumors (1 metastatic).
[4548] 61 untreated controls negative.
[4549] Orchiectomized at age 50 days.
[4550] 100% with malignant renal tumors.
[4551] 60 untreated castrated controls negative.
[4552] Castrated at age 4–6 wks.
[4553] 6% mammary tumors.
[4554] 71% mammary tumors.
[4555] Bilateral ovariectomy at age 8–10 wks.
[4556] 1 mammary carcinoma (adenoacanthoma), 1 pulmonary adenoma, 1 medullary tumor, 1 dermal epithelioma, 3 sarcomas, 5 hepatomas.
[4557] 2/115 with mammary carcinoma, 23.4% with hepatomas, 0.86% with epitheliomas, 11.3% with sarcomas, 10.4% ovarian tumors, 12.1% pulmonary adenomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
697. ESTRONE BENZOATE 								
Olivi, M., 1954	187 mice[4658, 4659]		M & F	0.05 mg. in olive oil, daily, every 2 d., or twice wkly.	S.C	0[4560]		At least 300 d.
698. ETHINYL ESTRADIOL 								
Bacon, R. L., and Kirkman, H., 1955.	Hamsters		M	20 mg. compressed pellet implanted up to 400 d. or more.	S.C. implant	Tumors[4561]		At least 400 d.
Field, J. B., et al., 1959	30 rats	Long-Evans	F	0.001 mg./d. in low-iodine diet for over 18 mos.	P.O	0[4562]		Up to 33 mos.
Kirkman, H., 1959	17 hamsters	Syrian	M	20 mg. pellets for avg. 388 d	Subpannicular implant.	Tumors[4563]		Up to 400 d.
699. 9α-FLUOROHYDROCORTISONE ACETATE 								
Selye, H., 1955	10 rats[4564]	Sprague-Dawley.	F	200 μg. in 0.1 ml. sesame oil/d. for 30 d.	S.C	0[4565]	All sacrificed	31 d.

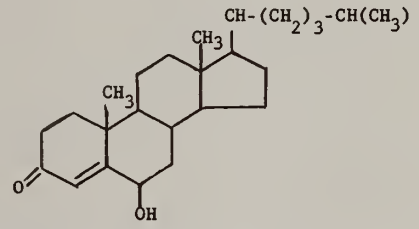
[4558] Some castrated.
[4559] Probably L strain; no spontaneous mammary tumors at 20 mos.
[4560] Histological study of hyperplastic and precancerous changes. 8 lymphosarcomas.
[4561] 1 testicular adenoma. 4 with epithelial hyperplasias (3 probable tumors, 1 probable early tumor).
[4562] Thyroid pathology only.
[4563] 5 with malignant renal tumors.
[4564] Unilateral nephrectomy. Water contained 1% NaCl.
[4565] Adrenal and lymphatic involution.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
				700. HYDROCORTISONE 				
Tolksdorf, S., et al., 1956	Rats		M	1–2 mg. in saline susp. daily for 19 d., off 3 d., daily again for 8 d.	S.C	0	Killed at intervals	50 d.
Schnitzer, A., 1957	2 rabbits			5 mg. hydrocortisone, three times wkly. for 3 mos.	In one animal S.C., in the second intradermal.	0[4566]		At least 3 mos.
				701. HYDROCORTISONE ACETATE 				
Hausberger, F. X., and Ramsay, A. J., 1955.	11 guinea pigs.		M	5–40 mg./d. for 12–150 d	S.C	0[4567]		Up to 150 d.
				702. 6-β-HYDROPEROXY-Δ⁴-CHOLESTENE-3-ONE 				
Fieser, L. F., et al., 1955	32 mice	Marsh-Buffalo		5 mg. in sesame oil, given in 3 spaced injs.	S.C	Tumors[4568]	17 survived 12 mos.	12 mos.
	Mice[4569]	Marsh-Buffalo		5 mg. in aqueous colloidal soln., given in 3 spaced injs.	S.C	0		12 mos.

[4566] Dermal atrophy, hyperkeratosis and precancerous lesions.
[4567] Developed steroid diabetes.
[4568] 13 with injection site fibrosarcomas at 12 mos. (avg. latent period 9.6 mos.).
[4569] Litter mates.

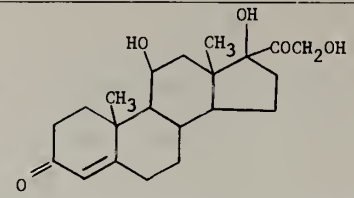
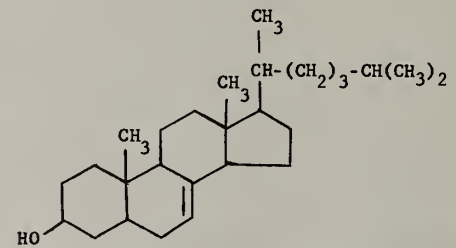
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
Bischoff, F., 1957	Mice	Marsh-Buffalo		Unspecified amt. in sesame oil	S.C. dorsal	Tumors[4570]		At least 12 mos.
	32 mice[198]	Marsh-Buffalo	M	5–15 mg. in sesame oil colloidal soln. or susp. 2 or 3 times, total dose 15–20 mg.	S.C. dorsal	Tumors[4571, 4572]		15 mos.
	Mice	Marsh-Buffalo		Unspecified amt. as aqueous colloid	S.C. dorsal	0[4573]		At least 12 mos.
Hieger, I., 1959	116 mice	Stock		Unspecified amt. in sesame oil	S.C	0	66 at 12 mos., 8 at 24 mos.	At least 24 mos.
	55 mice	Stock		Unspecified amt. in olive oil	S.C	0	28 at 12 mos., 5 at 24 mos.	At least 24 mos.
	36 mice	Buffalo		Unspecified amt. in sesame oil	S.C	Tumors[4333]	7 at 12 mos., 1 at 21 mos.	At least 21 mos.
	50 mice	C57		Unspecified amt. in sesame oil	S.C	Tumors[4391]	46 at 12 mos., 15 at 24 mos.	At least 24 mos.

703. 3-HYDROXY-Δ^4-CHOLESTEN-3-ONE



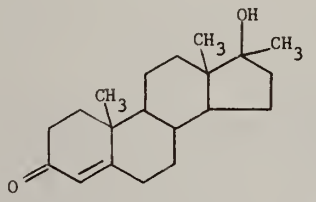
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
Bischoff, F., et al., 1955	33 mice		M	Unspecified amt. in sesame oil		Tumors[4574]		
Bischoff, F., 1957	32 mice	Marsh-Buffalo	M	5–15 mg.[4575] in sesame oil colloidal soln. or susp. 2 or 3 times, total dose 15–20 mg.	S.C. dorsal	Tumors[4576, 4577]		15 mos.
	33 mice[198]	Marsh-Buffalo	F	5–15 mg.[4575] in sesame oil colloidal soln. or susp. 2 or 3 times, total dose 15–20 mg.	S.C. dorsal	0[4578, 4579]		15 mos.
Hieger, I., 1959	50 mice	Stock		Unspecified amt. in olive oil	S.C	Tumors[4333]	35 at 12 mos., 9 at 21 mos.	At least 21 mos.
	54 mice	Stock		Unspecified amt. in sesame oil	S.C	Tumors[4333]	30 at 12 mos., 4 at 21 mos.	At least 21 mos.

[198] Castrated.
[4333] 1 sarcoma.
[4391] 4 sarcomas.
[4570] 56% fibrosarcomas.
[4571] 66% fibrosarcomas, 3% lymphoid tumors.
[4572] Of 62 sesame oil controls, 9% lymphoid tumors, 12% fibrosarcomas.
[4573] Fibrosarcomas negative.
[4574] 19% fibrosarcomas. Sesame oil controls negative.
[4575] Of the 6β isomer, containing 50% Epicolesterol.
[4576] 19% fibrosarcomas.
[4577] 79 sesame oil controls negative.
[4578] 18% adenocarcinomas, 15% fibrosarcomas.
[4579] Of 98 sesame oil controls, 13% adenocarcinomas, 7% fibrosarcomas.

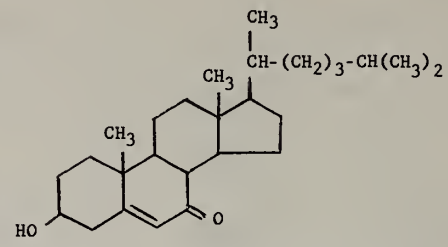
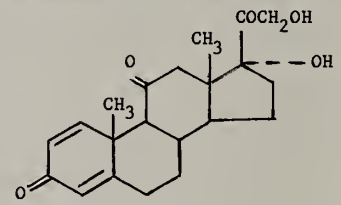
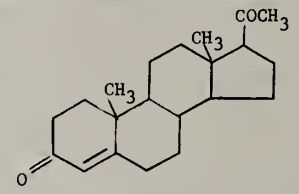
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
				704. 17-HYDROXY-CORTICOSTERONE 				
Houssay, B. A., et al., 1954	14 rats[4421]	White	F	50 mg. mixed with 25 mg. of lactose susp. in 0.5 ml. saline (0.9% NaCl); soln. daily treatment for 6 mos.	S.C.	0	All sacrificed at end of experiment.	6 mos.
				705. ISOCHOLESTEROL				
Hieger, I., 1957	10 mice			15% soln. in lard repeatedly	S.C.	0	4 at 24 mos	24 mos.
				706. ISOLUMISTEROL				
Hieger, I., 1957	10 mice			15% soln. in lard repeatedly	S.C.	0	4 at 18 mos	18 mos.
				707. LATHOSTEROL[4580] 				
Bischoff, F., 1957	20 mice[198]	Marsh-Buffalo	M	5–15 mg. in sesame oil colloidal soln. or susp. 2 or 3 times, total dose 15–20 mg.	S.C. dorsal	0[4581,4582]		15 mos.
	48 mice[198]	Marsh-Buffalo	F	5–15 mg. in sesame oil colloidal soln. or susp. 2 or 3 times, total dose 15–20 mg.	S.C. dorsal	0[4583,4584]		15 mos.
Hieger, I., 1957	50 mice			10% soln. in olive oil	S.C.	0	2 at 27 mos	27 mos.
Hieger, I., 1959	50 mice	C57		Unspecified amt	S.C.	0	39 at 12 mos., 5 at 24 mos.	At least 24 mos.

[198] Castrated.
[4421] Ovariectomized and partially pancreatectomized.
[4580] 7-cholesten-3β-01.
[4581] 15% fibrosarcomas, 11% lymphoid tumors.
[4582] Of 62 sesame oil controls, 12% fibrosarcomas, 9% lymphoid tumors.
[4583] 8% adenocarcinomas, 8% lymphoid tumors, 6% fibrosarcomas.
[4584] Of 98 sesame oil controls, 13% adenocarcinomas, 12% lymphoid tumors, 7.5% fibrosarcomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
708. 17-α-METHYL-Δ-5-ANDROSTENE-3-β, 17β DIOL[4585]								
Salgado, E., and Selye, H., 1954.	19 rats[4586]	Sprague-Dawley.	F	10 mg. in 0.2 ml. of water, Tween 80 as a susp. agent, for 46 d.	S.C.	([4587])	15/19 at 46 d	46 d.
	13 rats[4588]	Sprague-Dawley.	F	10 mg. in 0.2 ml. of water using Tween 80 as a susp. agent, for 46 d.	S.C.	([4589])	11/13 at 46 d	46 d.
	13 rats[4588]	Sprague-Dawley.	F	10 mg. micro-crystals susp. in Tween 80 given in 0.2 ml. water for 46 d.	S.C.	0[4590]		46 d.
	12 rats[4591]	Sprague-Dawley.	F	10 mg. micro-crystals susp. in Tween 80 given in 0.2 ml. water for 46 d.	S.C.	0[4592]		46 d.
Vol'fson, N. I., 1958	13 mice[4593]	C3HA	F	(2) 10 mg. in paraffin and lanolin pellets every mo., alternating on l. and r. side.	S.C. implant	0[4594,4595]	2 at 25 mos.	Up to 25 mos.
709. 17-METHYLTESTOSTERONE								
Wheeler, C. E., et al., 1953	2 guinea pigs.[4596]		M	250 μg. mixed with 95% ethyl alcohol and water, daily for total dose of 7,500 μg.	Skin of r. nipple and areola.	0[4597]		30 d.
Vol'fson, N. I., 1958	11 mice[4593]	C3HA	F	(2) 10 mg. in paraffin and lanolin pellets every mo., alternating on l. and r. side.	Skin implant	0[4595,4598]	2 at 20 mos	Up to 25 mos.



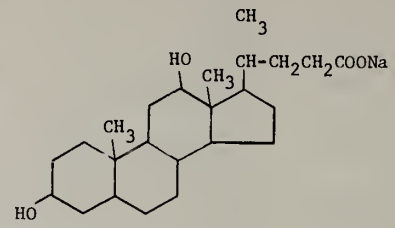
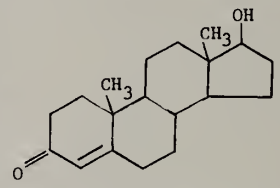
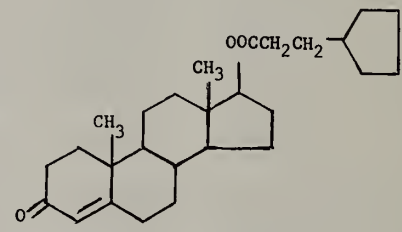
[4585] Methylandrostenediol.
[4586] Right side nephrectomy; bilateral adrenalectomy.
[4587] Non-adrenalectomized animals with thymic atrophy preputial gland hyperplasia and pancreatic signet-ring cells; negative for renal sclerosis.
[4588] Right nephrectomy.
[4589] Nephrosclerosis, myocarditis, cerebral and mesenteric periarteritis nodosa, thymic involvement, preputial gland hyperplasia, adrenal colloid granulosis, pancreatic signet-ring cells.
[4590] Nephrosclerosis, myocarditis, mesenteric periarteritis nodosa.
[4591] Right nephrectomy, thyroparathyroidectomy.
[4592] Nephrosclerosis, myocarditis, mesenteric periarteritis nodosa.
[4593] Survivors at 11 mos. 27 days.
[4594] 2/13 (15.4%) with mammary tumors.
[4595] 11/19 (57.9%) paraffin-lanolin pellet controls with mammary tumors (3 with pulmonary metastases).
[4596] Castrated immature.
[4597] Nipple growth and sebaceous gland hypertrophy at 30 days.
[4598] 1/11 (9.1%) with mammary tumor.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
				710. 7-OXOCHOLESTEROL 				
Bischoff, F., 1957	32 mice	Marsh-Buffalo	M	5–15 mg. in sesame oil colloidal soln. or susp. 2 or 3 times, total dose 15–20 mg.	S.C. dorsal	0[4599,4600]		15 mos.
				711. PREDNISONE[4601] 				
Tolksdorf, et al., 1956	Rats		M	2–3 mg. in saline susp. daily for 19 d., off 3 d., daily again for 8 d.	S.C	0	Killed at intervals	50 d.
	Rats		M	2–3 mg. in saline susp. daily for 19 d., off 3 d., daily again for 8 d.	S.C	0	Killed at intervals	50 d.
				712. PROGESTERONE 				
Bussi, L., and Pozza, G., 1952	8 rats	Albino	M & F	1 mg. in 0.2 ml. oil, daily for 105 d	S.C	0[4602]	Sacrificed at 105 d.	105 d.
Wheeler, C. E., et al., 1953	3 guinea pigs[4596].		M	400 μg. dissolved in 95% ethyl alcohol, daily, for total of 12,000 μg.[4603]	Skin of r. nipple and areola.	0		30 d.
Daane, T. A., and Lyons, W. R., 1954.	20 mice[4604]	C3H	M	1.0 mg. in 0.05 cc sesame oil for 45 d.	S.C	0	10 sacrificed by 45 d.	1 yr.

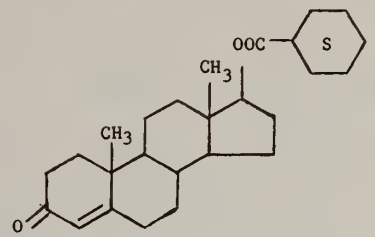
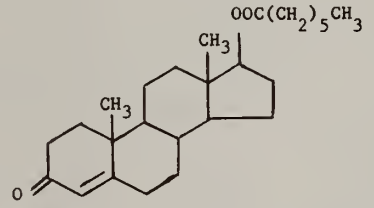
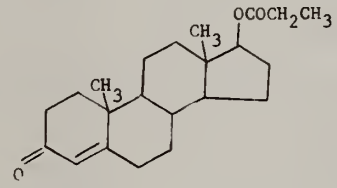
[4596] Castrated immature.
[4599] 3% lymphoid tumors, 9% fibrosarcomas.
[4600] 5% of 79 sesame oil controls with lymphoid tumors.
[4601] $\Delta^{1,4}$-pregadiene-17α, 21-diol-3,11,20-trione.
[4602] Hematological and pathological study.
[4603] Crystalline.
[4604] Castrated at age 6 wks.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
712. PROGESTERONE (Continued)								
Trentin, J. J., 1954	59 mice	C3H x A	F	14 mg. crystalline pellet implant every 28 d. up to 2 yrs.	S.C	Tumors[4605, 4606]		2 yrs.
	27 mice	C3H x A and CBA x A.	M	14 mg. crystalline pellet implant every 28 d. up to 2 yrs.	S.C	0		2 yrs.
	26 mice[198]	C3H x A and CBA x A	M	14 mg. crystalline pellet implant every 28 d. up to 2 yrs.	S.C	Tumors[4607]		2 yrs.
Ferguson, D. J., 1956	9–20 mice[4608]	C3H	F	0.02 mg. in oil once a d. (total vol. 0.03 ml./d.) 30–38 d. after operation, cont. for 14 d.	S.C	0	All sacrificed	13 mos. or more.
Kullander, S., 1956	13 rats[4609]		F	40 mg. pellet implanted	Thigh muscle	0	All sacrificed	At least 40 d.
	13 rats[4609]		F	40 mg. pellet implanted	Spleen	0	All sacrificed	At least 40 d.
	15 rats[4609]		F	40 mg. pellet implanted	Kidney	0	All sacrificed	At least 40 d.
Bischoff, F., 1957	35 mice[198]	Marsh-Buffalo	F	5–15 mg. in sesame oil colloidal soln. or susp. 2 or 3 times. Total dose 15–20 mg.	S.C. dorsal	0[4610, 4611]		15 mos.
Dow, C., 1959	2 dogs[4453]		F	10 mg. daily for 60 d., then hysterectomized.	I.M	0[4612]		60 d.
	2 dogs[4453]		F	10 mg. daily for 40 d., then hysterectomized.	I.M	0		40 d.
Gardner, W. U., 1959	2 mice[4613]	BC	F	Unspecified amt. as pellet	Intravaginal insert.	0	Mean age 592 d	Up to 244 d.
Kirkman, H., 1959	15 hamsters	Syrian	M	20 mg. pellets	Subpannicular implant.	0		418 d.
	15 hamsters	Syrian	M	20 mg. pellet	Subpannicular implant.	0	413–418 d	418 d.
	14 hamsters.[4614]	Syrian	F	20 mg. pellet	Subpannicular implant.	0	268–415 d	415 d.
	15 hamsters.	Syrian	F	20 mg. pellet	Subpannicular implant.	0	238–414 d	414 d.
	15 hamsters.[4614]	Syrian	M	20 mg. pellet	Subpannicular implant.	0	370–414 d	414 d.
	15 hamsters	Syrian	F	20 mg. pellets	Subpannicular implant.	0		414 d.
	15 hamsters.[4615]	Syrian	M	20 mg. pellets	Subpannicular implant.	0		414 d.
	14 hamsters	Syrian	F	20 mg. pellets	Subpannicular implant.	0		415 d.

[198] Castrated.
[4605] 88% mammary tumors at 493 days.
[4606] 62% of 58 controls with mammary tumors at 650 days.
[4607] 2 mammary tumors; 1 adrenal adenoma. 24 controls negative.
[4608] Hypophysectomized and castrated.
[4609] Spayed.
[4610] 15% lymphoid tumors.
[4611] 12% of 98 sesame oil controls with lymphoid tumors.
[4612] Endometrial cystic hyperplasia.
[4613] Begun at age 388 days.
[4614] Gonadectomized.
[4615] Orchiectomized.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
				713. SODIUM-DESOXYCHOLATE 				
Hieger, I., 1957	62 mice			60 mg.+1.2 g. cholesterol+12 g. olive oil and tristearin.	S.C	Tumors[4616]	6 at 24 mos	24 mos.
				714. TESTOSTERONE 				
Crabb, E. D., and Kelsall, M. A., 1957.	10 hamsters		M	Aqueous soln. 77.5–291.5 mg. in 14–30 inj. during 50–146 d.	Subpannicular inj.	0[4617]		146 d.
Kirkman, H., 1959	2 hamsters	Syrian	M & F	1.0 mg. in 2 ml. saline susp. every 2 d.	Subpannicular inj.	0	405 and 326 d	405 d.
				715. TESTOSTERONE CYCLOPENTYLPROPIONATE 				
Mirand, E. A., 1956	6 rats[198]	Wistar		100 mg.[4618] in cottonseed oil every 2 wks. for 1 or 2 yrs.	S.C	0		711 days.
	19 rats	Wistar		100 mg.[4618] in cottonseed oil every 2 wks. for 1 or 2 yrs.	S.C	0		725 d.

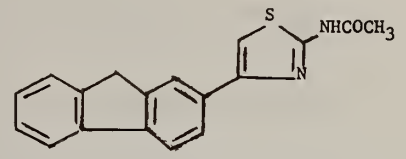
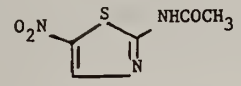
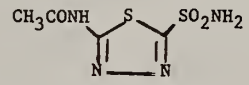
[198] Castrated.
[4616] C57 male with 1 sarcoma at 18 mos.
[4617] 1 with hepatic periportal infiltration.
[4618] As depo-testosterone cyclopentyl-propionate.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
716. TESTOSTERONE HEXAHYDROBENZOATE 								
Feyel-Cabanes, T., 1954	10 rats[4619]	Albino	M	24.1 mg. in oil	S.C	0		4½ wks.
717. TESTOSTERONE ENANTHATE 								
Rudali, G., et al., 1957	24 mice (2 mos. old).	AKR	M	4 times 25 mg. at 10 d. interval	I.M	0	16 at 90 d	90 d
718. TESTOSTERONE PROPIONATE 								
Caltabiano, S., et al., 1953	4 rabbits		2 M, 2 F	0.1 mg./Kg. body wt., daily for 3 mos.	S.C	0		3 mos.
Barraclough and Leathem, 1954.	Mice[4620]	Swiss	F	1 mg. in oil, 1 inj	S.C	0[4621]		100 d.
Brandes, D., and Bourne, G. H., 1954.	12 mice[4622]	Strong A	M	10 mg. implanted 13 or 22 d. after castration.	S.C. implant	0	Killed 8–21 d. after implant.	Up to 43 d.
Feyel-Cabanes, T., 1954	6 rats[4623]	Albino	M	20.8 mg. in oil	S.C	0		4½ wks.
Grunt, J. A., 1954	Guinea pigs[198]		M	12.5 gamma, 25 gamma, 50 gamma or 100 gamma/100 g., body wt. daily.	Inj	0[4624]		15 wks.

[198] Castrated.
[4619] Castrated; age 7.5 wks.
[4620] Age: 5, 10 or 20 days.
[4621] No necropsy report.
[4622] Castrated; age 4 mos.
[4623] Castrated; age 7.5 wks.
[4624] No necropsy report.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
718. TESTOSTERONE PROPIONATE (Continued)								
Rupp and Paschkis, 1954	Rats[4625]	([4626])	M	2.5 mg. daily for 16 d	S.C	0[4621]		33 d.
Steinberger, E., and Nelson, W. O., 1955.	4 rats[4627]	Sprague-Dawley.		2 mg. daily for 40 d	S.C	0[4628]	All sacrificed	40 d.
Coxon, R. V., et al., 1956	8 rats	Hooded	M	25 mg. pellet, 2 mg. crystals susp. in 5% gum acacia at 27 and 45 d.	S.C. inj	0[4629]		54 d.
	9 rats[4630]	Hooded	M	25 mg. pellet, 2 mg. crystals susp. in 5% gum acacia at 27 and 45 d.	S.C. inj	0[4629]		54 d.
Ferguson, D. J., 1956	9–20 mice[4631]	C3H	F	20 μg. in oil once/d. (total vol. 0.03 ml./d.) 30–38 d. after operation, contd. for 14 d.	S.C	0	All sacrificed	13 mos. or more.
Horning, E. S., 1958	10 hamsters	Golden	M	0.5 mg. in arachis oil once wkly. for 3 wks., 1 mg. given once wkly. for 6 mos., thereafter 2.5 mg. dose once wkly. up to 16 mos.	S.C	Tumors[4632]		16 mos.
	20 rats	Albino	F	0.5 mg. in arachis oil once wkly. for 3 wks., 1 mg. dose given once wkly. for 6 mos., thereafter 2.5 mg. dose once wkly. up to 21 mos.	S.C	Tumors[4633]	9 died in 6 mos., 10 at 16 mos.	21 mos.
Kirkman, H., 1959	10 hamsters.[4634]	Syrian	F	4 mg. pellets	Subpannicular implant.	0		433 d.
	20 hamsters	Syrian	M	30 mg. pellet every 150 d	Subpannicular implant.	0	226–908 d	908 d.
	15 hamsters.[4614]	Syrian	M	30 mg pellet every 150 d	Subpannicular implant.	0	616–906 d	906 d.
	12 hamsters	Syrian	F	30 mg. pellet every 150 d	Subpannicular implant.	0	400–693 d	693 d.
	14 hamsters.[4614]	Syrian	F	30 mg. pellet every 150 d	Subpannicular implant.	0	310–748 d	748 d.
Konoplev, V. P., 1959	28 rats		M	50–150 mg. cylindrical pellets once a mo. for 7 mos., total dose 800–1000 mg.	S.C. implant	0[4636]	Up to 7 mos	7 mos.
Sokolovskii, R. M., 1959	106 mice		F	Tampon which was dipped in 300 mg. mixed with 2 g. lanolin.	Vaginal insert	0[4636]	Sacrificed at 30 d	30 d.
Wasi, P., 1959	Mice		F	0.05 cc. of 10 mg./cc. in sesame oil twice wkly. for 10 wks.	Inj	0	Sacrificed at intervals.	
Kirkman, H., 1960	41 hamsters	Syrian	27 M, 14 F	Unspecified amt		Tumors[4637, 4638]		

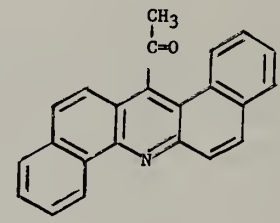
[4614] Gonadectomized.
[4621] No necropsy report.
[4625] Thyroidectomized.
[4626] Wistar descendants.
[4627] Adult; hypophysectomized.
[4628] Testicular histological study; no pathology reported.
[4629] Hepatic and renal pathology study.
[4630] Castrated 3 mos. before treatment.
[4631] Hypophysectomized and castrated.
[4632] Adrenocortical carcinoma, 1 adenoma. Colony negative for spontaneous adrenal tumors.
[4633] 3 ovarian theca cell tumors (unreported in untreated animals in this colony).
[4634] Age: 1 day.
[4635] Hypophyseal adenomas. (Probably spontaneous).
[4636] Pseudo-erosion of cervix uteri.
[4637] Males: 1 adrenal carcinoma, 1 pancreatic carcinoma, 1 squamous cell carcinoma, 1 sarcoma, 2 benign tumors. Females: 1 hepatic carcinoma, 2 benign tumors.
[4638] 71 untreated controls with 1 melanoma, 5 benign tumors.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
719. 2-ACETAMIDO-4-(2′FLUORENYL)THIAZOLE 								
Morris, H. P., et al., 1960	10 rats[4639]	Buffalo	F	0.05% in diet for avg. 6.2 mos., avg. daily intake 4.6 mg.	P.O	0[4640,4641]	Avg. age 12.4 mos	22 mos.
720. 2-ACETAMIDO-5-NITROTHIAZOLE 								
Cuckler, A. S., et al., 1955	11 dogs			10–40 mg./kg./d. for 77–135 d	P.O	0		135 d.
	5 monkeys			40 mg./kg./d. for 182 d	P.O	0		182 d.
	3 dogs			60 mg./kg./d. for 70–135 d	P.O	0		135 d.
	40 mice			57–416 mg./kg./d. for 42 d	P.O	0		42 d.
721. 2-ACETYLAMINO-1,3,4-THIADIAZOLE-5-SULFONAMIDE[4642] 								
Maren, T. H., et al., 1954	2 puppies	Beagles	M & F	20 mg./kg./d. by capsule.[4643]	P.O	0		11 wks.
	10 rats	Wistar	5 F & 5 M	50 mg./kg./d. for 4 wks., then 100 mg./kg./d. in diet.	P.O	0	100%	6 mos.
	10 rats	Wistar	5 F & 5 M	150 mg./kg./d. for 4 wks., then 300 mg./kg./d. in diet.	P.O	0	2 females died early.	6 mos.
	10 rats	Wistar	5 F & 5 M	300 mg./kg./d. for 4 wks., then 900 mg./kg./d. up to 20 wks.	P.O	0	2 sacrificed at 4 wks.	6 mos.
	8 dogs	Beagles		5 mg./kg./d., 10 mg./kg./d. or 10/mg./kg./12 hrs. for 2 wks.-9 mos.		0		9 mos.

[4639] Age 4.9 mos. avg.
[4640] 1 adrenal adenoma.
[4641] 36 untreated controls with 8 pituitary and 5 adrenal adenomas, 1 renal adenoma, 1 uterine adenocarcinoma, 1 inguinal fibroma, 1 leukemia.
[4642] Diamox.
[4643] Foster nursed from birth. Nursing female previously treated with 100 mg./kg./d. of Diamox.

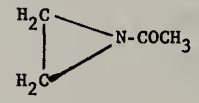
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
721. 2-ACETYLAMINO-1,3,4-THIADIAZOLE-5-SULFONAMIDE (Continued)								
	1 dog	Beagle	F	10 mg./kg./d. for 7 d., off 8th–13th d., on from 14th–245th d., off 1 d., on from 247th–274th d., off to 281st d.	P.O	0	Sacrificed at 281 d.	281 d.
	1 dog	Beagle	F	33 mg./kg./d. for 52 d., off from 53rd–57th d., on from 58th–62nd d., off from 63rd–70th d., on from 71st–365th d.	P.O	0	Sacrificed at 365 d.	12 mos.
	1 dog	Beagle	F	33 mg./kg./d. for 52 d., off from 53rd–57th d., on from 58th–361st d.	P.O	0	Sacrificed at 361 d.	361 d.
	2 puppies	Beagles	M & F	20 mg./kg./d. by capsule	P.O	0		11 wks.
	2 dogs	Beagles	F	100 mg./kg./d. for 140 d., off 7 d., on from 148th–477th d.	P.O	0	1 sacrificed at 478 d.	16 mos.

722. 10-n-ACETYL-1,2,5,6-DIBENZACRIDINE



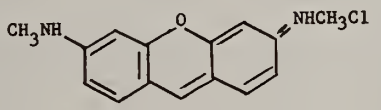
Lacassagne, A., et al., 1955	10 mice	XVII		0.5 to 1 mg. in peanut oil 3 times at 1 mo. interval.	S.C	1	6 at 200 d. and 3 at 276 d.	314 d.

723. ACETYLETHYLENEIMINE

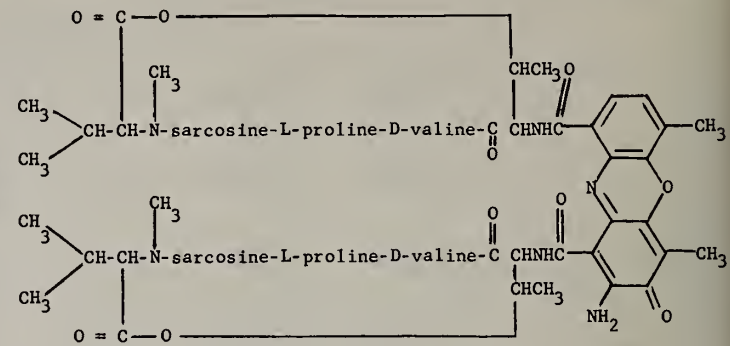
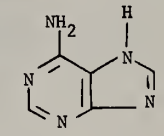
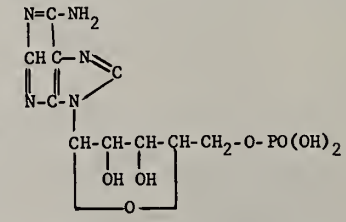


Walpole, A. L., et al., 1954	12 rats	Albino	6 āā	0.5 mg./100 g. in 0.1 ml./100 g. arachis oil[4644] once.	S.C. r. flank	0	1 died at 58 d., 1 died at 352 d.	515 d.
	6 rats	Albino	F	Total of 7.75 mg./100 g. in total of 1.55 ml./100 g. arachis oil[4644] twice wkly. for 184 dosing d.	S.C. r. flank	Tumors[4645, 4646].		482 d.

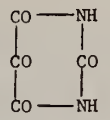
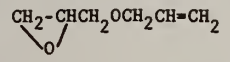
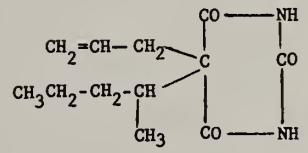
[4642] Diamox.
[4644] Sterilized (140° C for 1 hr.).
[4645] 6 with injection site sarcomas.
[4646] 12 arachis oil controls with 5 injection site sarcomas, 3 other-site tumors.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
723. ACETYLETHYLENEIMINE (Continued)								
	6 rats	Albino	M	Total of 15 mg./100 g. in total of 3.0 ml./100 g. arachis oil[4644] twice wkly. for 184 dosing d.	S.C. r. flank	Tumors[4647, 4645]	1 died at 517 d	517 d. or
	3 rats	Albino	F	Total of 9 mg./100 g. in total of 0.9 ml./100 g. arachis oil[4644] twice wkly. for 101 dosing d.	S.C. r. flank	Tumors[4646, 4648]	1 died at 697 d	697 d. or more.
Walpole, A. L., et al., 1954	3 rats	Albino	M	Total of 21 mg./100 g. in total of 2.1 ml./100 g. arachis oil[4644] twice wkly. for 101 dosing d.	S.C. r. flank	Tumors[4646, 4649]		180 d. or more
	6 rats	Albino	M	Total of 16 mg./100 g. in total of 3.2 ml./100 g. water twice wkly. for 110 dosing d.	S.C. r. flank	Tumors[4650, 4651]		449 d.
	6 rats	Albino	F	Total of 8 mg./100 g. in total of 1.6 ml./100 g. water twice wkly. for 110 dosing d.	S.C. r. flank	Tumors[4652]		266 d. or more.
	20 mice	Albino C	M	Total of 4.0 mg./20 g. dissolved in 0.8 ml./20 g. sterilized arachis oil twice wkly. for 59 dosing d.	S.C. r. flank	Tumors[4653, 4654]	14 died from 46–482 d.	482 d.
	20 mice	Albino C3Hf	F	Total of 3.6 mg./20 g. dissolved in 1.8 ml./20 g. sterilized arachis oil twice wkly. for 229 dosing d.	S.C. r. flank	Tumors[4655, 4656]	10 died from 25–369 d.	371 d.
724. ACRIDINE RED 								
Umeda, Masao, 1956	12 rats			Dissolved in propylene glycol at conc. of 1.0% in 1.0 cc. amts. one or two times/mo. After 14.5 mos., inj. increased to 4 or 5 times/mo.	S.C. inj. in back.	0	9 survived 300 d. or more.	621 d.
	12 rats	Hybrid		1.0 cc. of 1.0% dissolved in propylene glycol 2–3 times/mo.	S.C.	0[4657]	7 survived 300 d	621 d.

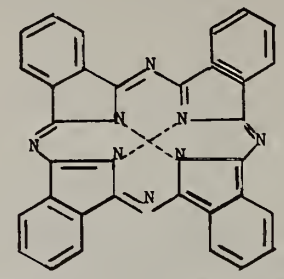
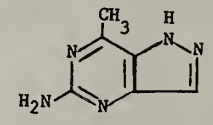
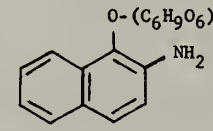
[4644] Sterilized (140° C for 1 hr.).
[4646] 12 arachis oil controls with 5 injection site sarcomas, 3 other-site tumors.
[4647] 4 with injection site sarcoma, 1 anaplastic tumor.
[4648] 1 injection site sarcoma, 1 anaplastic forestomach carcinoma.
[4649] 2 with injection site sarcomas, 1 with otic sebaceous carcinoma.
[4650] 3 with injection site sarcomas.
[4651] 2/12 controls with non-injection site tumor.
[4652] 1 injection site sarcoma.
[4653] 6 with injection site sarcoma.
[4654] 1/19 arachis oil controls with injection site sarcoma. 1 injection site fibroma, 4 other-site tumors.
[4655] 5 with injection site sarcomas.
[4656] 5/24 arachis oil controls with injection site sarcomas, 1 other-site tumor.
[4657] 1 hepatic cysticercus sarcoma. Injection site fibrosis, ulceration and granulation.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
				725. ACTINOMYCIN D[4658] 				
DiPaolo, J. A., et al., 1957	11 mice	Swiss		300 μg./kg. for 7 weekly doses, 500–1000 μg./kg. increasing doses up to 11 wks.	I.P	0[4659]	7 died at 11 wks	11 wks.
	12 mice	Swiss		200 μg./kg. for 7 weekly doses, 500–1000 μg./kg. increasing dose up to 11 wks.	I.P	0[4659]	4 died at 11 wks	11 wks.
				726. ADENINE 				
Haddow, A., and Horning, E. S., 1960.	20 mice	CBA		5 mg. wkly. for 28 wks	S.C	0	15 at 14 mos	14 mos. to date.
	20 mice	CBA		5 mg. wkly. for 28 wks	S.C	0	15 at 14 mos	14 mos. to date.
				727. ADENOSINE-5-PHOSPHATE[4660] 				
Haddow, A., and Horning, E. S., 1960.	20 mice	Stock		5 mg. wkly. for 17 wks	S.C	0	19 at 14 mos	14 mos. to date.

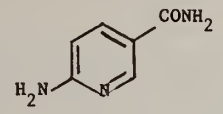
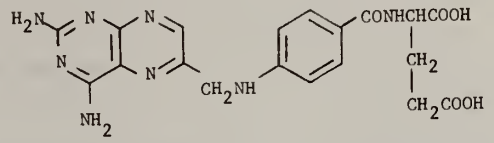
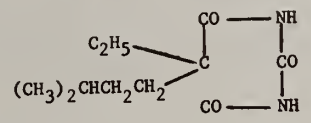
[4658] 1:4 ethanol-water.
[4659] Toxicity Study.
[4660] 5′-adenylic acid.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
728. ALLOXAN 								
Cohen, E. M., and Kokvan Alphen, C. C., 1953.	Rats			150–200 mg./kg. once	S.C	0[4661]		About 30 wks.
Bencosme, S. A., 1955	2 rabbits	New Zealand, white.		150 mg./kg.[4662] body wt. as 5% soln. in dist. water once.	I.V	0	One sacrificed at 2½ mos.	4½ mos.
Bencosme, S. A., and Lazarus, S. S., 1956.	36 rabbits			150 mg./kg.[4662] as 5% soln. in dist. water once.	I.V	0[4663]	11 died, remaining killed at var. intervals.	Up to 7 mos.
729. ALLYLGLYCIDYL ETHER 								
Hine, C. H., et al., 1956	10 rats	Long-Evans	M	900 ppm. of vapor 7 hrs./d. 5 d./wk. for 25 exposures.	Inhalation	0	8 died between 7th and 21st exposure.	About 5 wks.
	10 rats	Long-Evans	M	260 ppm. of vapor 7 hrs./d., 5 d./wk. for 50 exposures.	Inhalation	0		About 10 wks.
	10 rats	Long-Evans	M	400 ppm. of vapor 7 hrs./d., 5 d./wk. for 50 exposures.	Inhalation	0	1 died after 18th exposure.	About 10 wks.
	10 rats	Long-Evans	M	600 ppm. of vapor 7 hrs./d., 5 d./wk. for 25 exposures.	Inhalation	0	7 died between 7th and 21st exposure.	About 5 wks.
730. 5,5-ALLYL-(1-METHYLBUTYL)-BARBITURIC ACID 								
Fraser, H. F., and Isbell, H., 1954.	11 dogs	Mongrels	M & F	42 or 35 mg./kg.[4664] capsule, daily	P.O	0	100%	6 to 6½ mos.

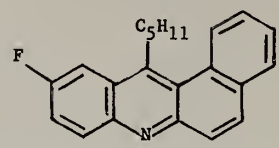
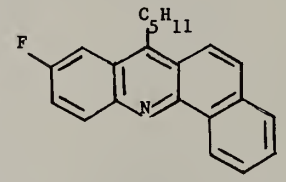
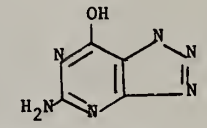
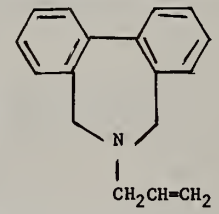
[4661] Cataracts at 7–14 wks.
[4662] As the monohydrate.
[4663] Pancreatic Study (small islets).
[4664] "Secobarbital".

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
731. ALUMINUM PHTHALOCYANINE 								
Haddow, A., and Horning, E. S., 1960.	20 mice	Stock		0.5 mg. wkly. for 11 wks	S.C	0	17 at 8 mos	8 mos. to date
732. 5-AMINO-7-METHYL-1,2,4,6-TETRA-AZAINDENE 								
Francis, J., et al., 1954	1 monkey			30 mg./kg. twice daily for 60 d	P.O	0[4665]	Throughout experiment.	60 d.
	3 dogs			1 dog—100 mg./kg. morn. and eve. for 1 wk., 2 dog, 95 and 100 mg., 3rd dog, 50 and 75 mg. After 4 d. dose increased to 100 mg./kg. twice daily, after 22 d. dose was stabilized at 30 mg./kg. twice daily till 15 wks.	P.O	0[4666]	1 died early, 2 sacrificed at end of treatment.	15 wks.
	Mice			0.25% in powdered food, intake approx. 0.5 g./kg./d. for 6 mos.	P.O	0[4667]	Duration of experiment.	6 mos.
	Mice			300 mg./kg. twice daily for 6 wks	P.O	0[4667]	All survived	6 wks.
733. 2-AMINO-1-NAPHTHYLGLUCOSIDURONIC ACID 								
Allen, M. J., et al., 1957	25 mice			1 part/4 parts cholesterol in 9–11 mg. pellet implant.	Urinary bladder	Tumors[4668, 4669].	17 at 40 wks	At least 40 wks.

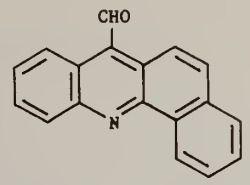
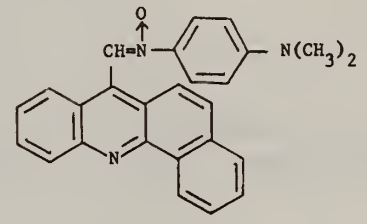
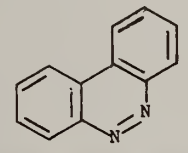
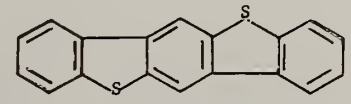
[4665] Weight increase.
[4666] Tuberculosis lesions. Hepatic cirrhosis and vacuolation.
[4667] Weight gain comparable to controls.
[4668] 4 with papilloma or adenoma, 3 with urinary cystic carcinoma.
[4669] 1/24 cholesterol controls with urinary cystic carcinoma.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
734. 6-AMINONICOTAMIDE 								
Morsiani, M., and Califano, A., 1958.	30 mice	White	M	4 mg./Kg. body wt. in saline every 3rd d. for 30 d.	I.P	0[4670]	12 at 30 d	30 d.
735. AMINOPTERIN 								
Shimkin, M. B., 1954	30 mice[4671]	Strain A	F	0.0025 mg./0.1 cc. water given on 3 consec. d., repeated 3 times at fortnightly intervals. Total dose of 0.03 mg.	I.P	Tumors[4672]	All survived inj. period.	About 37 wks.
Friederici, L., 1955	4 rabbits (2.5–3.5 kg. body wt).		F & M	0.5–11 mg	P.O (stomach tube).	0	1 at 36th d	At least 36 d.
Roe and Salaman, 1955	25 mice	Stock albino "S" strain.	M	5 to 6 wkly. 0.3 ml. applications, 0.01% to 0.02% soln. in saturated soln. of sodium bicarbonate in methanol (total dosage: 0.15 to 0.21 mg.[4673]).	Skin	1 (skin tumor).	14 alive at 18 wks.	At least 19 wks.
736. AMOBARBITAL 								
Fraser, H. F., and Isbell, H., 1954.	10 dogs	Mongrel	M & F	About 55 mg./kg. capsule daily	P.O	0	2 died	6 to 6½ mos.
Juhasz, J., et al., 1955	20 mice	White		1%[4674] in saline 0.1 ml. every three d. (5 inj.), one mo. rest; 0.1 ml. every 3 wks. (3 inj.); total dose—8 mg.	I.P	Tumors[4675]	10 at 5 mos	7 mos.

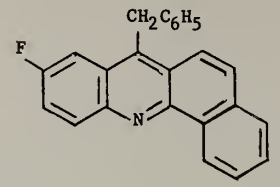
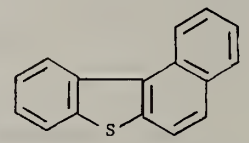
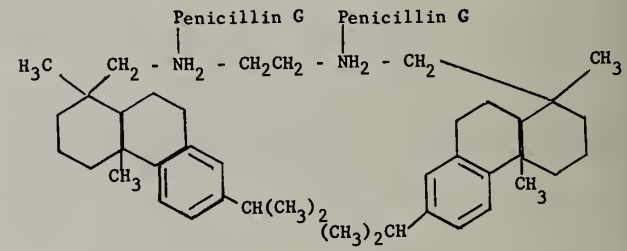
[4670] Hematological Study.
[4671] Virgin, age 3 mos.
[4672] 7/23 with pulmonary tumors (0.30 tumors/mouse).
[4673] 18 weekly applications of 0.3 ml. 0.5% croton oil in acetone, alternated (3–4 day intervals) with treatment.
[4674] As the sodium salt (amobarbital sodium or amytal sodium).
[4675] 2 pulmonary adenomas, 2 mediastinal lymphosarcoma, 1 retroperitoneal spindle cell sarcoma.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
				737. 10-n-AMYL-3-FLUORO-5,6-BENZACRIDINE 				
Lacassagne, et al., 1955	10 mice	XVII	M & F	3 times 0.5 mg. in peanut oil at 1 mo. intervals.	S.C	0	8 at 90 d	393 d.
				738. 10-n-AMYL-3-FLUORO-7,8-BENZACRIDINE 				
Lacassagne, A., et al., 1955	20 mice	XVII	M & F	3 times 0.5 mg. in peanut oil at 1 mo. intervals.	S.C	0	16 at 90 d	457 d.
	10 mice	XVII	M & F	1 drop of 0.3% in acetone 2 times a wk.	Nape of neck	0	5 at 90 d	320 d.
				739. 8-AZAQUANINE 				
Salaman and Roe, 1956	25 mice	Albino "S" strain.		10 thrice wkly. applications of 0.33% soln. in 50% aqueous carbowax 300 (total dose—10 mg.).[4676]	Skin	2 (total of 4 pap.).	23 at about 28 wks.	Approx. 30 wks.
				740. AZAPETINE 				
Randall, L. O., et al., 1955	4 dogs per group.			50, 100 or 200 mg. daily to each dog in each group.	P.O	0	100%	14 wks.
	10 weanling rats per group.	Sprague-Dawley.	M	7, 16 or 75 mg./kg. daily to each rat of each group.	P.O	0	100%	14 wks.

[4676] 18 weekly applications of 0.17% croton oil in acetone begun 23 days after treatment.

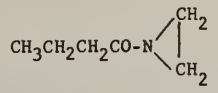
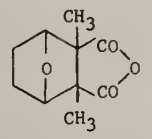
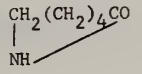
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
741. 3,4-BENZACRIDINE-9-ALDEHYDE 								
Mashbits, F. D., 1955[4677]	29 mice[4678]	White		5–10 mg. in saline	S.C	Tumors[4679]		
742. α-[9-(3,4-BENZACRIDYL)]-N-(p-DIMETHYLAMINOPHENYL)-NITRONE 								
Mashbits, F. D., 1955[4677]	25 mice[4678]	White		S.C	S.C	Tumors[4680]		
743. BENZO(C)CINNOLINE 								
Miller, J. A., et al., 1957	11 adult rats	Albino, Holtzman.	M	2.67 mM/kg. of diet for 8 mos	P.O	0	All alive after 8 mos.	11 mos.
744. BENZO(1,2-b.4,5-b′)DITHIONAPHTHENE 								
Waravdekar and Ranadive, 1957.	12 mice[4681]	Swiss	F	1 inj. of 2 mg. of comp. in 2 ml. tricaprylin.	S.C	0	Sacrificed when they appeared weak & emaciated.	6 mos.

[4677] From abstract.
[4678] Up to 3 mos.
[4679] 4 with benign papilloadenomas. No controls.
[4680] 1 with myeloid, 1 with lymphatic leukemia; 2 with benign pulmonary papilloadenomas. No controls.
[4681] Virgin, age 3 mos.

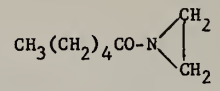
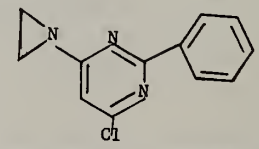
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
				745. 10-BENZYL-3-FLUORO-7,8-BENZACRIDINE 				
Lacassagne, A., et al., 1955	20 mice	XVII	M & F	3 times 0.5 mg. in peanut oil at 1 mo. intervals.	S.C	0	15 at 90 d	431 d.
				746. 3,4-BENZO-9-THIAFLUORENE 				
Waravdekar and Ranadive, 1957.	12 mice[4681]	Swiss	F	1 inj. of 2 mg. of comp. in 2 ml. of tricaprylin.	S.C	0	Sacrificed when they appeared weak & emaciated.	18–22 mos.
	12 mice[4681]	Swiss	F	1 drop of 0.5% soln. in benzene twice a wk.	Skin	0	Sacrificed when they appeared weak & emaciated.	16–20 mos.
				747. N,N'-BIS-(DEHYDROABIETYL)-ETHYLENEDIAMINE-DIBENZYLPENICILLIN 				
DeRose, A. F., et al., 1955	7 rats[4682]		M	2.4% in diet for 3 mos	P.O	0		3 mos.
	2 dogs			330 or 400 mg./kg. daily for 3–3½ mos.	P.O	0		3½ mos.
	7 rats[4682]		M	0.3% in diet for 4½ mos	P.O	0		4½ mos.
	7 rats[4682]		M	1.2% in diet for 3½ mos	P.O	0		3½ mos.

[4681] Virgin, age 3 mos.

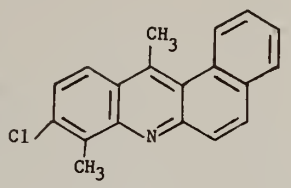
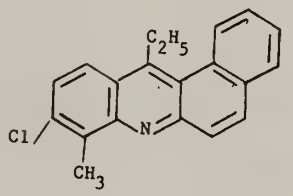
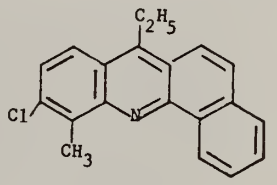
[4682] Young.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
749. N-BUTYRYLETHYLENEIMINE 								
Walpole, A. L., et al., 1954	20 mice	Albino, 10 C, 10 C3Hf.	M	0.3 mg./20 g. dissolved in 0.1 ml./20 g. sterilized arachis oil once.	S.C. r. flank	0	All died by 435th d.	435 d.
	20 mice	Albino C3Hf	F	Total of 9.75 mg./20 g. dissolved in 3.8 ml./20 g. sterilized arachis oil twice wkly. for 137 dosing d.	S.C. r. flank	Tumors[4685, 4686].	14 died from 11–500th d.	504 d.
	12 rats	Albino	6 āā	Total of 22 mg./100 g. in 4.4 ml./100 g. arachis oil[4644] twice wkly. for 198 dosing d.	S.C. r. flank	Tumors[4686, 4687].		344 d. or more.
	12 rats	Albino	6 āā	1 mg./100 g. in 0.1 ml./100 g. arachis oil[4644] once.	S.C. r. flank	0	All died at 489 d.	489 d.
	12 rats	Albino	6 āā	Total of 22.5 mg./100 g. in total of 4.5 ml./100 g. water twice wkly. for 179 dosing d.	S.C. r. flank	Tumors[4688, 4689].	1 died at 28 d., 1 died at 428 d.	428 d. or more.
750. CANTHARIDINE 								
Roe and Salaman, 1955	20 mice	Albino "S" strain.	M	9 wkly. 0.3 ml. doses of 0.01% soln. in acetone, followed by 6 wkly. 0.3 ml. doses of 0.02% soln. in acetone (Total dose: 0.63 mg.[4690]).	Skin	4 (6 skin tumors).	17 at 20½ wks.	At least 21½ wks.
751. CAPROLACTAM 								
Goldblatt, M. W., et al., 1954	6 rats[4691]			Avg. of 0.667 g./kg./d. in drinking water for 70 d.	P.O.	0[4692]		118 d.

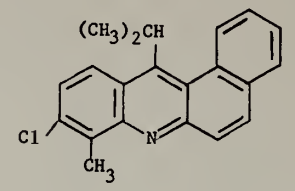
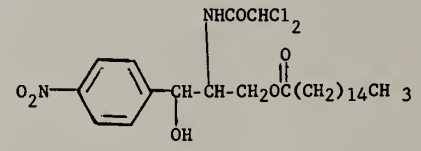
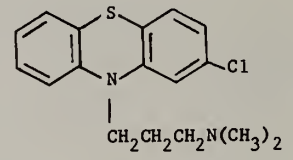
[4644] Sterilized (140° C for 1 hr.).
[4683] "7-methylbisdehydrodoisynolic acid."
[4684] 1 with malignant renal tumor.
[4685] 3 with injection site sarcoma.
[4686] 12 arachis oil controls with 3 injection site sarcomas, 3 other-site tumors.
[4687] 11 with injection site sarcoma. 2 with mediastinal sarcoma, 2 with thoracic sarcoma. 1 mammary carcinoma, 1 uterine sarcoma.
[4688] 6 males, 4 females with injection site sarcoma; 1 mammary fibroadenoma.
[4689] Controls negative.
[4690] 18 weekly applications of 0.3 ml. 0.5% croton oil in acetone alternated (3–4 day intervals) with treatment; begun 17 days after first treatment.
[4691] Litter mates.
[4692] No pathology reported.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
752. CAPROYLETHYLENEIMINE 								
Walpole, A. L., et al., 1954	16 mice	Albino C3Hf	M	Total of 15.3 mg./20 g. dissolved in 2.55 ml./20 g. sterilized arachis oil twice wkly. for 179 dosing d.	S.C. r. flank	Tumors[4686, 4693].	11 died from 41–531st. d.	531 d.
	20 mice	Albino C3Hf	F	Total of 7.2 mg./20 g. dissolved in 2.4 ml./20 g. sterilized arachis oil twice wkly. for 284 dosing d.	S.C. r. flank	Tumors[4694, 4695].	9 died from 49–193 d.	385 d.
	17 mice	Albino C	F	0.5 mg./20 g. dissolved in 0.1 ml./20 g. sterilized arachis oil once.	S.C. r. flank	0	All died by 422 d	422 d.
	12 rats	Albino	6 āā	Total of 52.5 mg./100 g. in total of 3.5 ml./100 g. carbowax 300 twice wkly. for 119 dosing d.	S.C. r. flank	Tumors[4696, 4697].	1 died at 328 d	450 d.
	6 rats	Albino	F	Total of 51 mg./100 g. in total of 8.5 ml./100 g. arachis oil[4644] twice wkly. for 133 dosing d.	S.C. r. flank	Tumors[4686, 4698].		277 d. or more.
	10 rats	Albino	6 M, 4 F	2 mg./100 g. in 0.1 ml./100 g. arachis oil[4644] once.	S.C. r. flank	0[4699]	1 died at 123 d	446 d. or more.
	6 rats	Albino	M	Total of 49.5 mg./100 g. in total of 8.25 ml./100 g. arachis oil[4644] twice wkly. for 133 dosing d.	S.C. r. flank	Tumors[4698, 4686].		314 d. or more.
753. CARBOXYMETHYLCELLULOSE $(C_6H_{10}O_5)_nOCH_2COOH$								
Lusky, L. M., and Nelson, A. A., 1957.	30 rats	20 Osborne-Mendel, 10 Bethesda Black.	20 M, 10 F	1 cc. of 2% aqueous soln. wkly	S.C.	Tumors[4700]		73 wks.
754. 4-CHLORO-6-ETHYLENEIMINO-2-PHENYLPYRIMIDINE 								
Walpole, A. L., et al., 1954	12 rats	Albino	6āā	Total of 96 mg./100 g. in total of 6.4 ml./100 g. arachis oil[4644] twice wkly. for 114 dosing d.	S.C. r. flank	Tumors[4701, 4702].	1 died at 62 d	154 d.

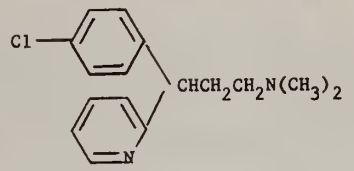
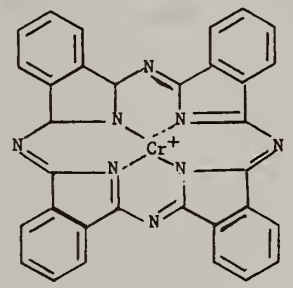
[4644] Sterilized (140° C for 1 hr.).
[4686] 12 arachis oil controls with 3 injection site sarcomas, 3 other-site tumors.
[4693] 5 with injection site sarcomas.
[4694] 2 with injection site sarcomas.
[4695] 24 arachis oil controls with 5 injection site sarcomas, 1 other-site tumor.
[4696] 8 with injection site sarcomas, 1 mammary carcinoma.
[4697] 2/12 controls with non-injection site tumors.
[4698] 6 with injection site sarcomas.
[4699] No comparable control.
[4700] 13 with injection site fibrosarcomas. 1 intra-abdominal lymphosarcoma (probably spontaneous).
[4701] 11 with injection site sarcomas.
[4702] 12 arachis oil controls with 5 injection site sarcomas, 3 other-site tumors.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
755. 2-CHLORO-1,10-DIMETHYL-5,6-BENZACRIDINE 								
Zajdela, F., Buu-Hoi, Ng. Ph, 1955.	12 mice			0.5 mg. in peanut oil	S.C	0		360 d.
	40 mice			0.3% in acetone twice wkly	Skin	Tumors[4703]	2 at 287 d	
	30 mice			0.3% in acetone twice wkly	Skin	Tumors[4704]	3 at 220 d	
	20 mice			0.5 mg. in peanut oil	S.C	0		330 d.
756. 2-CHLORO-1-METHYL-10-ETHYL-5,6-BENZACRIDINE 								
Zajdela, F., Buu-Hoi, Ng. Ph., 1955.	10 mice			0.5 mg. in peanut oil	S.C	0		250 d.
757. 2-CHLORO-1-METHYL-10-ETHYL-7,8-BENZACRIDINE 								
Zajdela, F. Buu-Hoi, Ng. Ph., 1955.	20 mice			0.5 mg. and 0.25 mg. in peanut oil	S.C	Tumors[4705]	9 at 190 d	
	10 mice			0.3% in acetone twice wkly	Skin	0		360 d.

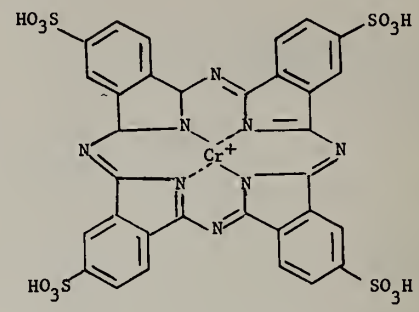
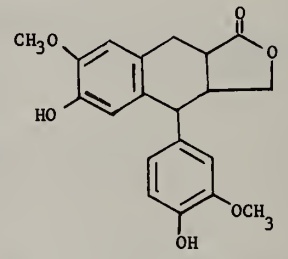
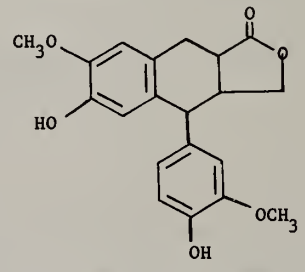
[4703] 2 papillomas, 3 epitheliomas.
[4704] 3 papillomas.
[4705] 1 sarcoma.

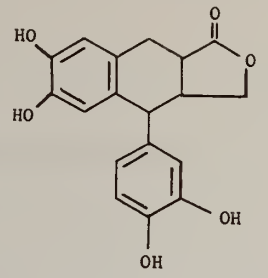
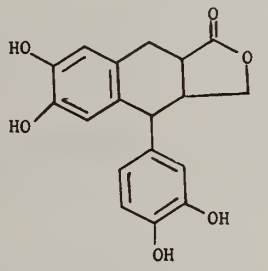
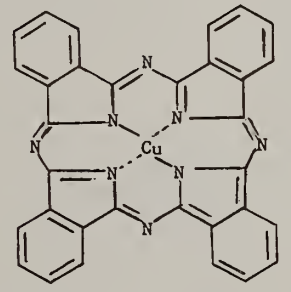
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
758. 2-CHLORO-1-METHYL-10-ISOPROPYL-5,6-BENZACRIDINE 								
Zajdela, F. Buu-Hoi, Ng. Ph., 1955.	20 mice			0.5 mg. in peanut oil	S.C	0		400 d.
	20 mice			0.3% in acetone twice wkly	Skin	0		300 d.
759. CHLOROMYCETIN PALMITATE 								
Saslaw, S., et al., 1954	3 monkeys	Macaca Mulatta.		470 mg. twice daily, total dose 185 g.	P.O	0[4706]		7 mos.
760. CHLORPROMAZINE 								
Bourgeois-Gavadrin, M., et al., 1955.	5 rabbits			25 mg. every other d. up to 3 mos	P.O	0		3 mos.
	10 rats			1.5 mg./kg. 3 times a wk. for 8 wks	I.M	0	50% died	8 wks.
	5 rabbits			4 mg./kg. on alternate d. up to 3 mos.	I.M	0		3 mos.
	10 rats			7.0 mg./kg. 3 times a wk. for 8 wks	P.O	0	10% died	8 wks.
Wilens, S. L., et al., 1956	9 rabbits	Albino		10 mg./kg. daily. fed food pellets with 1% cholesterol.	I.M	0	100% at 10 wks	10 wks.
	9 rabbits	Albino		10 mg./kg. daily	I.M	0	100% at 10 wks	10 wks.

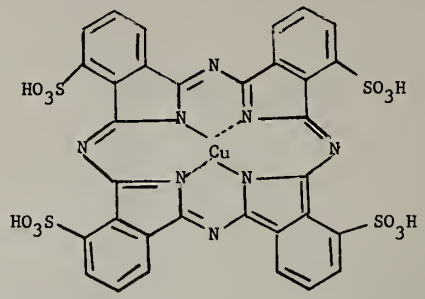
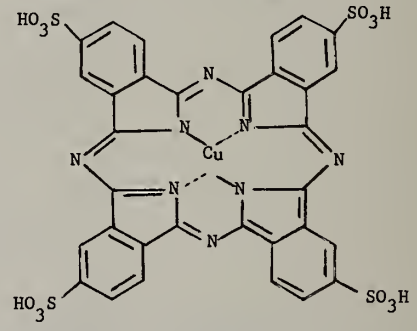
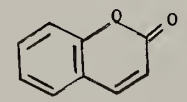
[4706] Hematological Study.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
760. CHLORPROMAZINE (Continued)								
Yamamoto, K., Yamaguchi, K., Savada, T., and Ogama, Y., Shinozi Kenkyuoho Nempo, 1957.	Mice			1.4 to 14 mg./kg./d.	P.O.[4707]	0[4708]		80 d.
	Mice			2.5 to 25.3 mg./kg./d	P.O.[4709]	0[4708]		80 d.
Fujita, K., et al., 1958	15 rats	Mixed		100 mg. in/ml. dist. water every 2 d., increasing 100 mg. after every 4 injs.	Inj	0		6 mos.
761. CHLORPROPHENPYRIDAMINE 								
Labelle, A., and Tislow, R., 1955.	Rats	Sprague-Dawley.	M & F	1 mg./kg. avg. daily dose in diet for lifetime.	P.O	0[4692]		([4710]).
	3 dogs			0.42 mg./kg. in gelatin capsule given 5 times/wk. for 180 d.	P.O	0	100%	180 d.
	4 dogs			1.75 mg./kg. in gelatin capsule given 5 times/wk. for 219–250 d.	P.O	0	1 at 250 d	250 d.
	9 dogs			3.50 mg./kg. in gelatin capsule given 5 times/wk. for 24–197 d.	P.O	0	1 at 197 d	197 d.
	6 rabbits			2 drops of 0.25% soln.[4711] 3 times/d. at 2 hr. intervals for 30 d.	Eye, topical	0[4712]		30 d.
762. CHROMIUM PHTHALOCYANINE 								
Haddow, A., and Horning, E. S., 1960.	20 mice	Stock		0.5 mg. wkly. for 11 wks	S.C	0	18 at 8 mos	8 mos. to date.

[4692] No pathology reported.
[4707] As hydrochloride.
[4708] Subacute toxicity studied.
[4709] As phenolphthalein salt.
[4710] Lifetime study carried through 3 successive generations.
[4711] As the maleate.
[4712] No pathology reported.

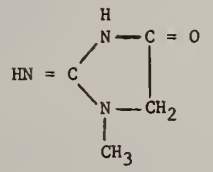
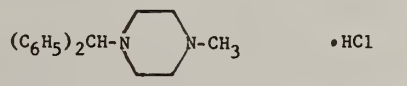
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
763. CHROMIUM PHTHALOCYANINETETRA-4-SULFONIC ACID 								
Haddow, A., and Horning E. S., 1960.	20 mice	Stock		0.5 mg. wkly. for 23 wks	S.C.	0	16 at 8 mos	8 mos. to date.
764. α-CONIDENDRIN 								
Wilson and Cox, 1954	18 rats	Albino	M	0.5 or 1.0% in the diet for 420 d	P.O.	0	Half sacrificed at 220 d.	420 d.
	9 rats	Albino	F	0.125 or 1.0% in the diet	P.O.	0		420 d.
765. β-CONIDENDRIN 								
Wilson and Cox, 1954	14 rats	Albino	M	0.5 or 1.0% in the diet for 420 d	P.O.	0	Half sacrificed at 220 d.	420 d.
	10 rats	Albino	F	0.125 or 1.0% in the diet	P.O.	0		420 d.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
766. α-CONIDENDROL 								
Wilson and Cox, 1954	10 rats	Albino	F	0.125 or 1.0% in the diet	P.O	0		420 d.
	19 rats	Albino	M	0.5 or 1.0% in the diet for 420 d	P.O	0	Half sacrificed at 220 d.	420 d.
767. β-CONIDENDROL 								
Wilson and Cox, 1954	10 rats	Albino	F	0.125 or 1.0% in the diet	P.O	0		420 d.
	18 rats	Albino	M	0.5 or 1.0% in the diet for 420 d	P.O	0	Half sacrificed at 220 d.	420 d.
768. COPPER PHTHALOCYANINE 								
Haddow, A., and Horning, E. S., 1960.	20 mice	Stock		0.5 mg. wkly. for 34 wks	S.C	0	18 at 8 mos	8 mos. to date.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
769. COPPER PHTHALOCYANINETETRA-3-SULFONIC ACID 								
Haddow, A., and Horning, E. S., 1960.	20 mice	Stock		0.5 mg. wkly. for 36 wks	S.C	0	20 at 8 mos	8 mos. to date.
770. COPPER PHTHALOCYANINETETRA-4-SULFONIC ACID 								
Haddow, A., and Horning, E. S., 1960.	20 mice	Stock		0.5 mg. wkly. for 25 wks	S.C	0	11 at 8 mos	8 mos. to date.
771. COUMARIN 								
Roe and Salaman, 1955	25 mice	Stock albino "S" strain.	M	0.3 ml. of 15% soln. in acetone, once (Total dosage: 45.0 mg.[4713]).	Skin	1 (2 skin tumors).	17 at 21 wks	At least 22 wks.
	40 mice	Stock albino "S" strain.	M	One 0.3 ml. application of 10% soln. in acetone, followed at wkly. intervals by 12 applications of 3.3% soln. in acetone (Total dose: 150.0 mg.[4714]).	Skin	0	13 at about 19 wks.	Approx. 20½ wks.

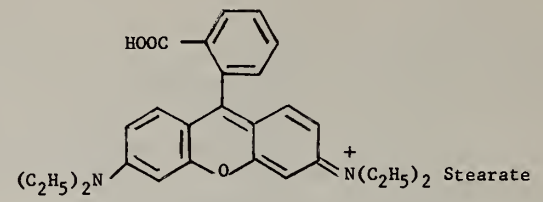
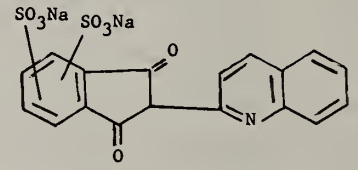
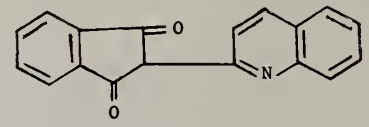
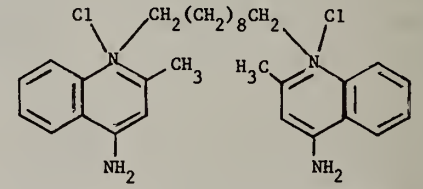
[4713] 18 weekly applications of 0.3 ml. 0.5% croton oil in acetone begun 3 wks. after treatment.

[4714] 18 weekly applications of 0.3 ml. 0.5% croton oil in acetone alternated (3–4 day intervals) with treatment; begun 10 days after first treatment.

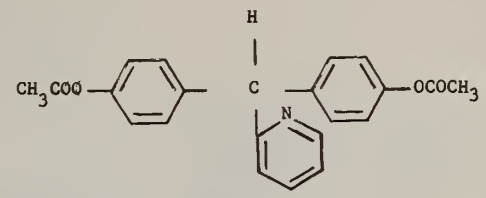
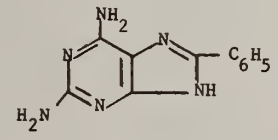
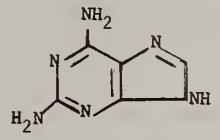
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
771. COUMARIN (Continued)								
Hazleton, L. W., et al., 1956.[4715]	25 rats	Carworth Farms Albino.	12 M, 13 F	Pair fed 2500 ppm. in diet for 90 d	P.O	0[4716]		90 d.
	5 rats	Carworth Farms Albino.	M	200 ppm. in diet for 90 d	P.O	0	100% at 90 d	90 d.
	5 rats	Carworth Farms Albino.	M	1000 ppm. in diet for 90 d	P.O	0	100% at 90 d	90 d.
	25 rats	Carworth Farms Albino.	12 M, 13 F	Pair fed 50 ppm. in diet for 90 d	P.O	0		90 d.
	25 rats	Carworth Farms Albino.	12 M, 13 F	Pair fed 250 ppm. in diet for 90 d	P.O	0		90 d.
Zwickey, R. E., and Nelson, A. A., 1956.	Dogs	Mongrel		50 mg./kg./d. up to 9 mos	P.O	0	1–9 mos	Up to 9 mos.
	4 dogs	Mongrel		10 mg./kg./d. up to 11 mos	P.O	0		Up to 11 mos.
	7 dogs	Mongrel		25 mg./kg./d. up to 11 mos	P.O	0		Up to 11 mos.
	Rats			1000 ppm. in diet for 27 wks	P.O	0		27 wks.
	Rats			150 mg./kg./d. for 27 wks	P.O	0		27 wks.
772. CREATININE 								
MacDonald, R. A., 1959	6 rats	Sprague-Dawley.	M	8 mg. twice daily for 73 d	S.C	0		73 d.
773. CYCLIZINE HYDROCHLORIDE 								
Norton, S., et al., 1954	40 rats	CF	M	0.25, 0.5, 1.0 or 2.0 g./kg. of diet	P.O	0	2 died	12 wks.

[4715] 1,2-benzopyrone.

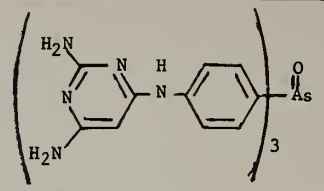
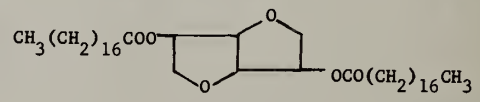
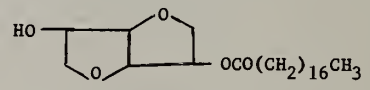
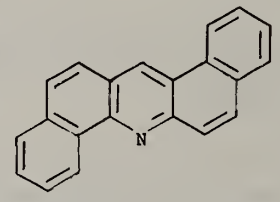
[4716] 4 with hepatic degeneration.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
				774. D & C RED NO. 37 				
Hansen, W. H., et al., 1960	40 rats[4717]	Albino	20 F, 20 M	0.25, 0.5, 1.0 and 2.0% in diet for 90 d.	P.O	0		90 d.
				775. D & C YELLOW NO. 10 				
Hansen, W. H., et al., 1960	50 rats[4717]	Albino	25 F, 25 M	0.25, 0.5, 1.0, 2.0 and 5.0% in diet for 90 d.	P.O	0		90 d.
				776. D & C YELLOW NO. 11 				
Hansen, W. H., et al., 1960	50 rats[4717]	Albino	25 F, 25 M	0.25 ,0.5, 1.0, 2.0 and 5.0% in diet for 90 d.	P.O	0		90 d.
				777. DECAMETHYLENE-BIS-[4-AMINOQUINALDINIUM CHLORIDE][4718] 				
Babbs, M., et al., 1956	10 rats	Wistar	F	0.05% in drinking water for 26 wks	P.O	0[4719]		26 wks.
	10 rats	Wistar	F	0.01% in drinking water for 26 wks	P.O	0[4719]	1 died during 5th wk.[4720]	26 wks.

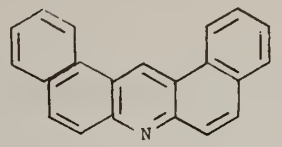
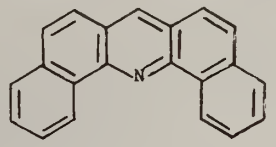
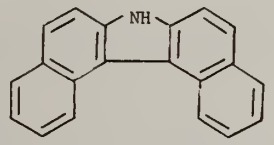
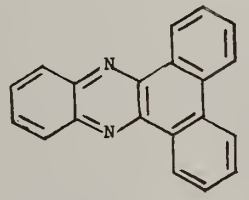
[4717] 10/group.
[4718] "Dequadin" (Allen and Hanburys Ltd.).
[4719] No pathology.
[4720] Cause unknown.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
778. (4,4′-DIACETOXYDIPHENYL)-(PYRIDYL-2)-METHANE 								
Schmidt, L., 1955	6 rats			40 mg./kg. daily in food	P.O	0	100%	3 mos.
779. 2,6-DIAMINO-8-PHENYLPURINE 								
Salaman and Roe, 1956	25 mice	Albino "S" strain.		10 thrice wkly. applications of 0.5% soln. in 50% aqueous carbowax 300 (total dose—15 mg.)[4721]	Skin	2 (1 pap. each).	23 at about 28 wks.	Approx. 30 wks.
780. 2,6-DIAMINOPURINE 								
Salaman and Roe, 1956	25 mice	Albino "S" strain.		10 thrice wkly. applications of 0.33% soln. in 50% aqueous carbowax 300 (total dose—10 mg.)[4721]	Skin	1 (with 1 pap.).	23 at about 28 wks.	Approx. 30 wks.

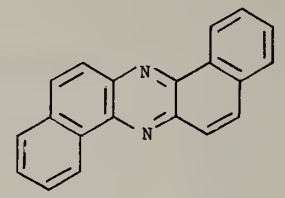
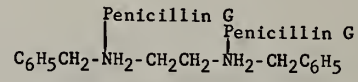
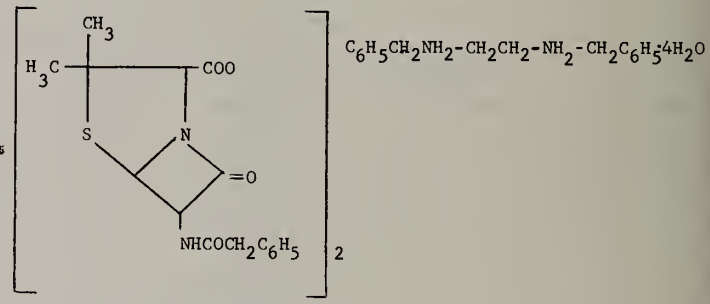
[4721] 18 weekly applications of 0.17% croton oil in acetone begun 23 days after first treatment.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
781. 4-(2,4-DIAMINO-6-PYRIMIDINYLAMINO)-PHENYLARSINE OXIDE 								
Hurst, E. W., 1959	1 rabbit			10 doses of 13 mg./kg. and less in 105 d.	I.M	0[4722]	100%	105 d.
	2 monkeys	Macaca mulatta		2 mg./kg. increased to 7 mg./kg. 5 d./wk. for 182 d.	I.M	0[4723]	100%	182 d.
	4 monkeys	Macaca mulatta		4.5 mg./kg. gradually increased to 7 mg./kg. at wkly. intervals, total dose 16 to 21 mg./kg.	I.M	0[4724]	1 died 3 d. after final dose.	At least 141 d.
782. 1,4,3,6-DIANHYDROSORBITAL DISTEARATE 								
Setala, K., et al., 1959	Mice	White	M	0.18 mole. dispersion in 100% Carbowax 400, 6 times wkly. for duration of experiment.	Skin	0[4725,4726]		Up to 30 d.
783. 1,4,3,6-DIANHYDROSORBITAL MONOSTEARATE 								
Setala, K., et al., 1959	Mice	White	M	0.18 mole. dispersion in 100% Carbowax 400, 6 times wkly. for duration of experiment.	Skin	0[4726,4727]		Up to 30 d.
784. 1,2,5,6-DIBENZACRIDINE 								
Orr, J. W., 1596	Mice	1 F			Skin	0		

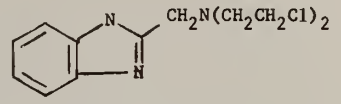
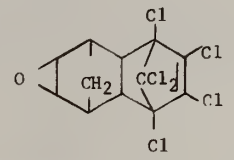
[4722] Neural and renal lesions.
[4723] C.N.S. Toxicity Study.
[4724] Renal lesions.
[4725] Some with interfallicular epidermal hyperplasia.
[4726] Carbowax 400 controls normal.
[4727] Interfallicular epidermal hyperplasia.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
785. 1,2,7,8-DIBENZACRIDINE[4728] 								
Lacassagne, A., et al., 1955	20 mice	XVII		0.37 acetone 1 drop 2 wkly	Skin	0	9 at 250 d., 4 at 390 d.	400 d.
	10 mice	XVII		0.5 to 1 mg. in peanut oil 3 times at 1 mo. interval.	S.C	0	4 at 200 d	590 d.
786. 3,4,5,6-DIBENZACRIDINE[4729] 								
Lacassagne, A., et al., 1955	10 mice	XVII		0.3% acetone 1 drop 2 wkly	Skin	3	3 at 162 d	245 d.
	10 mice	XVII		0.5 to 1 mg. in peanut oil 3 times 1 mo. interval.	S.C	0	3 at 202 d	327 d.
787. 3,4,5,6-DIBENZCARBAZOLE 								
Bonser, G. M., et al., 1954	1 dog	Terrier	F	5 cc. of a 0.25% soln. in arachis oil, wkly. to 12 mos.	Intravesically (using catheter).	1[4730]	$3\frac{1}{2}$ yrs	$3\frac{1}{2}$ yrs.
Orr, J. W., 1956	Mice	1 F			Skin	0		
788. 1,2,3,4-DIBENZPHENAZINE 								
Rudali, G., et al., 1955	19 (3 mo. old) rats.	Wistar	Both	As 15% in a 10 mg. cholesterol or paraffin pellet.	In bladder cavity.	Tumors[4731]	8 at 410 d	410 d.

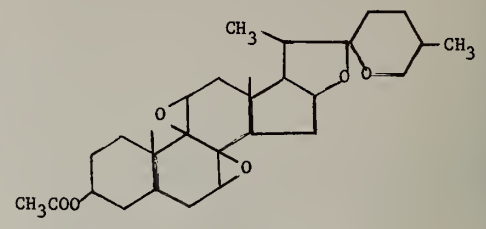
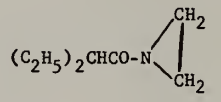
[4728] 3,4,5,6-dibenzacridine.
[4729] 1,2,7,8-dibenzacridine.
[4730] Multiple papillomas (approx. 40), 1 urinary cystic transitional-cell carcinoma.
[4731] 7 urinary cystic tumors. Survivors excluded.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
789. 1,2,5,6-DIBENZPHENAZINE 								
Rudali, G., et al., 1955	29 rats (3 mos. old).	Wistar	M & F	10 mg. cholesterol or paraffin pellet	In bladder cavity.	Tumors[4732]	15 at 400 d	400 d.
Allen, M. J., et al., 1957	20 mice			1 part/4 parts cholesterol in 9–11 mg. pellet implant.	Urinary bladder	0[4733,4734]	10 at 52 wks	52 wks.
790. N,N′-DIBENZYLETHYLENEDIAMINE DIPENICILLIN G 								
Seifter, J., et al., 1954	6 dogs			400,000–750,000 units, thrice wkly. for total of 15–18 doses.	I.M	0		6 wks.
	5 dogs			500,000–1,000,000 units, 6 d./wk. for total of 26–37 doses.	I.M	0		5 wks.
791. N,N′-DIBENZYLETHYLENEDIAMINE PENICILLIN[4735] 								
DeRose, A. F., et al., 1955	7 rats[4736]		M	Varying doses based on units of penicillin potency in diet.	P.O	0		
	2 dogs			Varying doses based on units of penicillin potency in diet.	P.O	0		

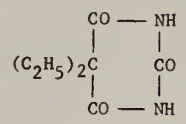
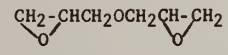
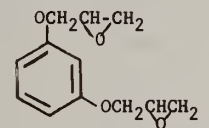
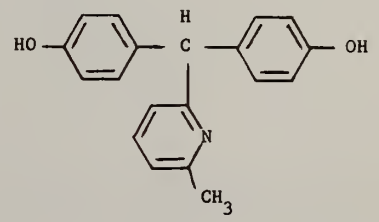
[4732] 10 urinary cystic tumors. Survivors excluded.
[4733] 1 urinary cystic papilloma or adenoma.
[4734] 1/24 cholesterol controls with urinary cystic carcinoma.
[4735] Young.
[4736] Benzathane penicillin.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
792. 2-[DI-(2-CHLOROETHYL)AMINOMETHYL]-BENZIMIDAZOLE 								
Ultmann, J. E., et al., 1959	4 rabbits			Varying from 1–12 mg./kg. in saline in 4–16 doses.	I.P	0[4737]	3 killed at 39, 40 & 61 d., 1 died at 60 d.	61 d.
793. DIELDRIN[4738] 								
Treon, J. F., and Cleveland, F. P., 1955.	Rabbits			<12 mg./d. in ultrasene 2 hrs./d., 5 d./wk. for 10 wks.	Skin	0	High mortality	10 wks.
	Rats		M & F	2.5, 5.0 or 75.0 ppm. in diet for 6 mos.	P.O	0		6 mos.
	120 rats	Carworth	60 F, 60 M	2.5, 12.5, or 25.0 ppm. as alcoholic soln. in diet for 2 yrs.	P.O	0	Few deaths	2 yrs.
	2 dogs	Beagles	M & F	10 ppm. in diet 6 d./wk. for 9 mos	P.O	0	100%	9 mos.
	4 dogs	Beagles	1 M, 3 F	25–50 ppm. in diet 6 d./wk. up to 1.3 mos.	P.O	0	1 died at 11 d	1.3 mos.
	8 dogs	Beagles	4 M, 4 F	3 & 1 ppm. in diet 6 d./wk. for 15.7 mos.	P.O	0	100%	15.7 mos.
	Rabbits			50–100 mg./d. in vegetable oil 2 hrs./d., 5 d./wk. for 10 wks.	Skin	0		10 wks.
	Rabbits			100–300 mg./d. as dry powder 2 hrs./d., 5 d./wk. for 10 wks.	Skin	0		10 wks.
Ortega, P., et al., 1957	12 rats	Sherman white	6 āā	25 ppm. in diet up to 8 mos	P.O	0[4739]	Killed at intervals	8 mos.
	12 rats	Sherman white	6 āā	2.5 ppm. in diet up to 8 mos	P.O	0[4739]	Killed at intervals	8 mos.

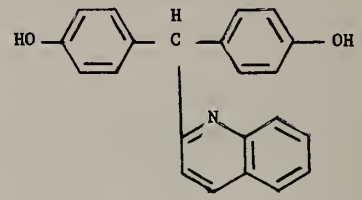
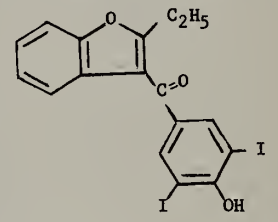
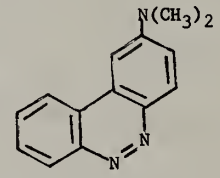
[4737] Toxicity Study.
[4738] Recrystallized; 85% pure.
[4739] Hepatic cell alteration.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
794. 7,8,9,11-DIEPOXY-22-ISOALLOSPIROSTAN-3β-OL ACETATE 								
Bischoff, F., 1957	35 mice	Marsh-Buffalo		Unspecified amt. as aqueous colloid	S.C. dorsal	0[4740]		15 mos.
	33 mice	Marsh-Buffalo	M	5–15 mg. in sesame oil colloidal soln. or susp. 2 or 3 times, total dose 15–20 mg.	S.C. dorsal	0	12 died	15 mos.
795. DIETHYLACETYLETHYLENEIMINE 								
Walpole, A. L., et al., 1954	6 rats	Albino	F	Total of 46 mg./100 g. in total of 4.6 ml./100 g. carbowax 300 twice wkly. for 245 dosing d.	S.C. r. flank	Tumors[4741, 4742]		346 d. or more.
	6 rats	Albino	M	Total of 40 mg./100 g. in total of 4.0 ml./100 g. carbowax 300 twice wkly. for 245 dosing d.	S.C. r. flank	Tumors[4742, 4743]		327 d. or more.
	16 mice	Albino C3Hf	F	Total of 9.75 mg./20 g. dissolved in 3.8 ml./20 g. sterilized arachis oil twice wkly. for 137 dosing d.	S.C. r. flank	Tumors[4744, 4745]	6 died from 28–443 d.	443 d.
	12 rats	Albino	6 āā	2 mg./100 g. in 0.1 ml./100 g. arachis oil[4644] once.	S.C. r. flank	0[4746]	11 died by 489 d	489 d.
	6 rats	Albino	F	Total of 44 mg./100 g. in total of 4.4 ml./100 g. arachis oil[4644] twice wkly. for 198 dosing d.	S.C. r. flank	Tumors[4745, 4747]		314 d. or more.
	6 rats	Albino	M	Total of 42 mg./100 g. in total of 4.2 ml./100 g. arachis oil [4644] twice wkly. for 198 dosing d.	S.C. r. flank	Tumors[4745, 4748]		301 d. or more.

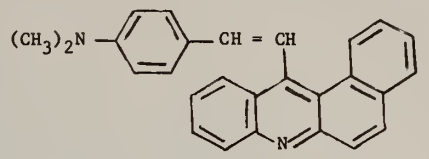
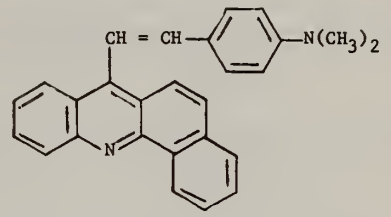
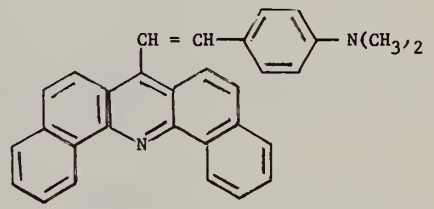
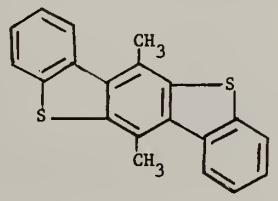
[4644] Sterilized (140° C for 1 hr.).
[4740] Negative for fibrosarcomas.
[4741] 5 with injection site sarcomas, 5 injection site mammary carcinomata.
[4742] Controls negative.
[4743] 6 with injection site sarcomas.
[4744] 10 with injection site sarcomas.
[4745] 12 arachis oil controls with 3 injection site sarcomas, 3 other-site tumors.
[4746] 1 mammary fibroadenoma. No comparable control.
[4747] 3 with injection site sarcomas, 3 injection site mammary carcinomas, 1 uterine sarcoma, 1 lymphoid leukemia.
[4748] 6 with injection site sarcomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
796. 5,5-DIETHYLBARBITURIC ACID, SODIUM SALT[4749]  Na salt								
Fraser, H. F., and Isbell, H., 1954.	15 dogs	Mongrel	M & F	106 to 168 mg./kg. daily	P.O	0	13	216 to 339 d.
797. DIGLYCIDYL ETHER[4750] 								
Hine, C. H., et al., 1961	3 rabbits	New Zealand	M	100 mg./kg. as 10% in propylene glycol once.	I.V	0		35 d.
	30 rats	Long-Evans	M	0.3 ppm. 4 hrs./d., 5 d./wk. up to 60 exposures.	Inhalation	0[4751]	10 killed after 20 exposures, 10 killed after 60 exposures.	1 yr. 90 d.
	3 rabbits	New Zealand	M	200 mg./kg. as 10% in propylene glycol once.	I.V	0		33 d.
	30 rats	Long-Evans	M	3 ppm. 4 hrs./d., 5 d./wk. for 19 exposures.	Inhalation	0	5 died in exposure period, 15 killed at 29 d.	1 yr. 29 d.
798. DIGLYCIDYL RESORCINOL ETHER 								
Hine, C. H., et al., 1958	10 rats		M	Exposed to air saturated with vapor 7 hrs./d., 5 d./wk., for total of 50 exposures.	Inhalation	0	1 died between 3rd & 4th wks.	10 wks.
799. 4,4′-DIHYDROXY-DIPHENYL-(6-2-METHYLPYRIDYL-2)-METHANE 								
Schmidt, L., 1955	6 rats			30 mg./kg. daily in food	P.O	0	100%	3 mos.

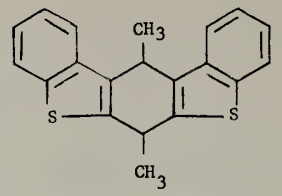
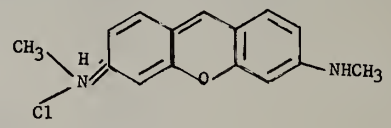
[4749] Sodium barbital.
[4750] Di(2,3-epoxypropyl)-ether.
[4751] 1 pulmonary reticulum cell sarcoma (probably spontaneous).

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
800. (4,4'-DIHYDROXY-DIPHENYL)-(QUINOLYL-2)-METHYLMETHANE 								
Schmidt, L., 1955	6 rats			40 mg./kg. daily food	P.O	0	100%	3 mos.
801. 3,5-DIIODO-4-HYDROXYPHENYL-2-ETHYL-3-BENZOFURANYL KETONE 								
Charlier, R., 1959	10 rats	White	M & F	30 mg./kg. daily	Gastric tube	0	All	3 mos.
	10 rats	White	M & F	30 mg./kg. daily	Gastric tube	0	All	3 mos.
	10 rats	White	M & F	40 mg./kg. daily	Gastric tube	0	All	3 mos.
	10 rats	White	M & F	40 mg./kg. daily	Gastric tube	0	All	3 mos.
	10 rats	White	M & F	20 mg./kg. daily	Gastric tube	0	All	3 mos.
	10 rats	White	M & F	20 mg./kg. daily	Gastric tube	0	All	3 mos.
802. 2-DIMETHYLAMINOBENZO(C)CINNOLINE 								
Miller, J. A., et al., 1957	6 adult rats	Albino, Holtzman.	M	2.67 mM/kg. of diet for 7 mos.[4752]	P.O	0	All alive after 7 mos.	9 mos.

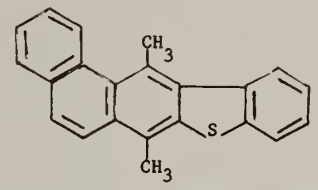
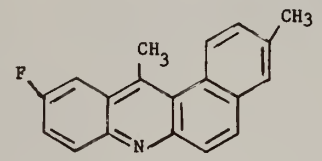
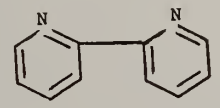
[4752] Poor absorption; based on detection in feces.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
803. p-DIMETHYLAMINOBENZYLIDEN-1,2-BENZ-9-METHYLACRIDINE 								
Mashbits, F. D., 1955[4677]	25 mice[4753]	White		5–10 mg. in saline	S.C	Tumors[4754]		
804. p-DIMETHYLAMINOBENZYLIDEN-3,4-BENZ-9-METHYLACRIDINE 								
Mashbits, F. D., 1955[4677]	30 mice[4753]	White		5–10 mg. in saline	S.C	Tumors[4755]		
805. p-DIMETHYLAMINOBENZYLIDENE-3,4,5,6-DIBENZ-9-METHYLACRIDINE 								
Mashbits, F. D., 1955[4677]	20 mice[4753]	White		5–10 mg. in saline	S.C	Tumors[4756]		At least 9 mos.
806. 6,12-DIMETHYLBENZO[1,2-b,4,5-b']DITHIONAPHTHENE 								
Waravdekar and Ranadive, 1957.	12 mice[4757]	Swiss	F	1 inj. of 2 mg. of comp. in 2 ml. tricaprylin.	S.C	9 (fibrosarcomas).	Sacrificed when they appeared weak & emaciated.	6 mos.

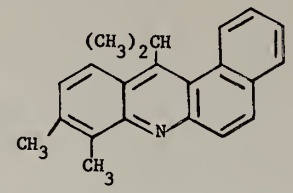
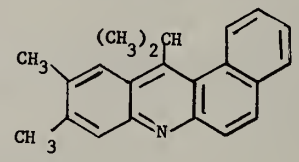
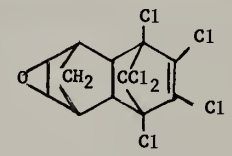
[4677] From abstract.
[4753] Age up to 3 mos.
[4754] 2 infiltrative pulmonary adenomas. No controls.
[4755] 2 with pulmonary adenomas, 2 with pulmonary adenocarcinoma. No controls.
[4756] 1 myeloid leukemia, 1 pulmonary papilloadenoma. No controls.
[4757] Virgin, age 3 mos.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
807. 6,12-DIMETHYLBENZO[1,2b:5,4b']DITHIONAPHTHENE 								
Waravdekar and Ranadive, 1957.	13 mice[4757]	Swiss	F	1 inj. of 2 mg. of comp. in 2 ml. tricaprylin.	S.C.	12 (fibrosarcomas).	Sacrificed when they appeared weak & emaciated.	4–6 mos.
	12 mice[4757]	Swiss	F	1 drop of 0.5% soln. in benzene twice wkly.[4758]	Skin	3[4759]	Sacrificed when they appeared weak & emaciated.	19–22 mos.
808. N,N'-DI-α-METHYLBENZYLETHYLENE DIAMINE DIPENICILLIN G $C_6H_5\text{-}CH(CH_3)NHCH_2CH_2NHCH(CH_3)\text{-}C_6H_5$ • Dipenicillin G								
Seifter, J., et al., 1954	20 rats	Albino	M & F	0.25–0.5% in the diet for 6 mos	P.O.	0		6 mos.
	6 cats			125,000 units thrice wkly. for total of 29–32 doses.	I.M.	0		10 wks.
	6 dogs			500,000 units thrice wkly. for total of 30–31 doses.	I.M.	0		10 wks.
809. DIMETHYLDIAMINO-XANTHENYL CHLORIDE[4760] 								
Umeda, Masao, 1956	25 rats, adult	Albino, mixed	M & F	1 cc. waterly soln.[4761] once a wk. After 2 mos. reduced to once or twice mthly. After 11 mos. inj. was increased to 3 or 4 times mthly.	S.C. inj. in back at same site.	Tumors[4762]	16 rats died early, 9 survived over 400 d.	563 d.

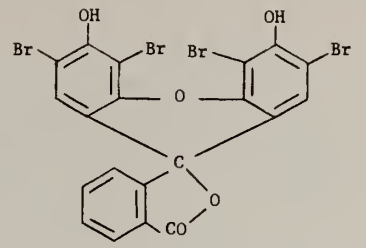
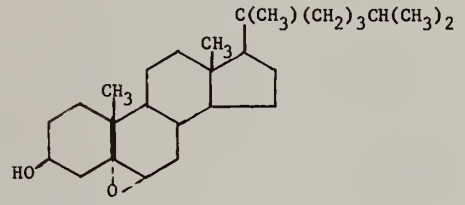
[4757] Virgin, age 3 mos.
[4758] Continued until tumor appearance or death.
[4759] 1 epidermoid carcinoma, 1 fibrosarcoma, 1 papilloma.
[4760] Acridine Red, Color Index No. 740.
[4761] Heat sterilized before injection.
[4762] 7/9 survivors with injection site sarcomas, 4 fibrosarcomas (1 with pulmonary and lymphatic metastases), 3 spindle cell sarcomas. 1 death at 263 days with hepatic cysticercus sarcoma.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
810. 4,9-DIMETHYL-2,3,5,6-DIBENZOTHIOPHANTHRENE 								
Waravdekar and Ranadive, 1957.	3 mice[4757]	Swiss	F	1 inj. of 2 mg. of comp. in 2 ml. tricaprylin.	S.C	2 (fibrosarcomas).	Sacrificed when they appeared weak & emaciated.	4–6 mos.
	14 mice[4757]	Swiss	F	1 drop of 0.5% soln. in benzene twice wkly.[4758]	Skin	11[4763]	Sacrificed when they appeared weak & emaciated.	8–10 mos.
811. 10,3′-DIMETHYL-3-FLUORO-5,6-BENZACRIDINE 								
Lacassagne, A., et al., 1955	10 mice	XVII	M & F	3 times 0.5 mg. in peanut oil at 1 mo. intervals.	S.C	0	10 at 90 d	440 d.
812. α,α-DIPYRIDYL  548a								
Haddow, A., and Horning, E. S., 1960.	20 mice	Stock		5 mg. wkly. for 40 wks	S.C	Tumors[4764]	12 at 10 mos	10 mos. to date.

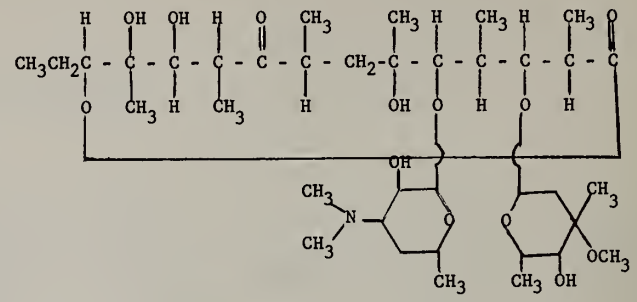
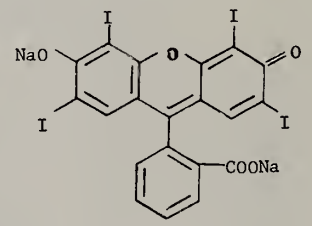
[4757] Virgin, age 3 mos.
[4758] Continued until tumor appearance or death.
[4763] 11 epidermoid carcinomas.
[4764] 1 parotid tumor.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
813. 1,2-DIMETHYL-10-ISOPROPYL-5,6-BENZACRIDINE 								
Lacassagne, A., et al., 1955	10 mice	XVII	M & F	3 times 0.5 mg. in peanut oil at 1 mo. intervals.	S.C	0	10 at 90 d	386 d.
814. 2,3-DIMETHYL-10-ISOPROPYL-5,6-BENZACRIDINE 								
Lacassagne, A., et al., 1955	10 mice	XVII	M & F	3 times 0.5 mg. in peanut oil at 1 mo. intervals.	S.C	0	9 at 90 d	438 d.
815. ENDRIN[4765] 								
Treon, J. F., and Cleveland, F. P., 1955.	Rabbits			<75 mg./d. as dry powder 2 hrs./d., 5 d./wk., for 10 wks.	Skin	0		10 wks.
	Rabbits			Unspecified amt. in ultrasene 2 hrs./d., 5 d./wk. for 10 wks.	Skin	0		10 wks.
	Rabbits			Unspecified amt. in vegetable oil 2 hrs./d., 5 d./wk. for 10 wks.	Skin	0		10 wks.
Speck, L. B., and Maaske, C. A., 1958.	20–60 rats	Sprague- Dawley albino.	M	3.5 mg. in 0.2 cc. peanut oil/100 g. body wt. given 5 d./wk.	P.O. (stomach tube).	0	Many died at 7 mos.	7 mos.
	20–60 rats	Sprague-Dawley albino.	M	1.7 mg. in 0.2 cc. peanut oil/100 g. body wt. given 5 d./wk.	P.O. (stomach tube).	0		7 mos.
	20–60 rats	Sprague-Dawley albino.	M	0.8 mg. in 0.2 cc. peanut oil/100 g. body wt. given 5 d./wk.	P.O. (stomach tube).	0		7 mos.

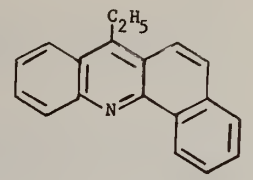
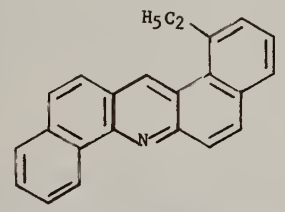
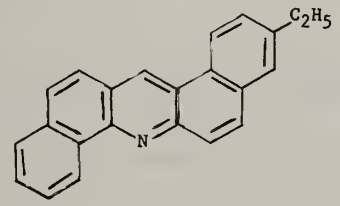
[4765] 1,2,3,4,10,10-hexachloro-exo-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1,4-endo,endo-5,8-dimethanonaphthalene, recrystallized.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
816. EOSIN[4766] 								
Umeda, M., 1955	20 rats	Saitama-mixed		2 cc. of 5 g./10 cc. of dist. water once a wk. for 14 wks.; then 1 cc. of 5 g./10 cc. of dist. water once a wk.	S.C. back	Tumors[4767]	3 survived more than 503 d.	671 d.
	20 rats	Albino-mixed	M & F	2 cc. of 5 g./10 cc. dist. water soln.[4761] once a wk. and after 14 wks. reduced to 1 cc. Injs. modified depending on condition of animal.[4768]	S.C. inj. over abdomen.	Tumors[4769]	3 lived 503 d. or more.	671 d.
817. 5α,6α-EPOXY-3β-CHOLESTANOL 								
Bischoff, F., 1957	33 mice[4770]	Marsh-Buffalo	F	5–15 mg. in sesame oil colloidal soln. or susp. 2 or 3 times, total dose 15-20 mg.	S.C. dorsal	Tumors[4771, 4772]		15 mos.
	Mice	Marsh-Buffalo		Unspecified amt. in cottonseed oil	S.C. dorsal	Tumors[4733]		At least 12 mos.
	Mice	Marsh-Buffalo		Unspecified amt. in cottonseed oil + sesamin mother liquid.	S.C. dorsal	Tumors[4774]		At least 12 mos.
	Mice	Marsh-Buffalo		Unspecified amt. in sesame oil	S.C. dorsal	Tumors[4775]		At least 12 mos.
	Mice	Marsh-Buffalo		Unspecified amt. as aqueous colloid	S.C. dorsal	0[4776]		At least 12 mos.

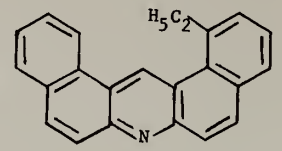
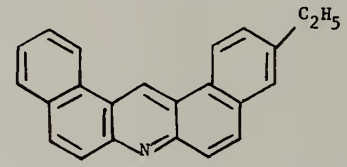
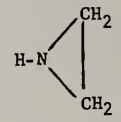
[4733] 1 urinary cystic papilloma or adenoma.
[4761] Heat sterilized before injection.
[4766] Eosin G.
[4767] 2 spindle cell fibrosarcoma at 543 and 671 days, 2 mammary fibroadenoma. 1 hepatic cysticercus sarcoma.
[4768] Eosin, yellow tinge, Color Index No. 768.
[4769] 2 injection site spindle cell fibrosarcomas at 503 and 638 days. 1 mammary fibroadenoma (probably spontaneous). No macroscopic metastases.
[4770] Castrated.
[4771] 9% adenocarcinomas, 48% fibrosarcomas.
[4772] 98 sesame oil controls developed 13% adenocarcinomas, 7% fibrosarcomas.
[4773] 18% fibrosarcomas.
[4774] 33% fibrosarcomas.
[4775] 39% fibrosarcomas.
[4776] Negative for fibrosarcomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
				818. ERYTHROMYCIN 				
Nelson, A. A., and Radomski, J. L., 1954.	4 dogs[4777]	Mongrel		250 mg./kg. capsule/d., 6 d./wk. for 98 d.	P.O	0	100%	98 d.
Anderson, R. C., et al., 1955	3 dogs	Mongrel	F	10 mg./kg. in 4 mg./kg. digammacaine and 0.20 cc./kg. diethyl carbonate, daily for 4 mos.	I.M	0	Sacrificed	4 mos.
	3 dogs	Mongrel	F	5 mg./kg. in 2 mg./kg. digammacaine and 0.10 cc./kg. diethyl carbonate, daily for 4 mos.	I.M	0[4778]	100%	At least 4 mos.
	3 dogs	Mongrel	F	85 mg./kg.[4779] twice daily for 3 mos	I.V	0	100%	3 mos.
				819. ERYTHROSINE[4780] 				
Nelson, Arthur A., and Hagan, E. Conway, 1953.	18 rats	Osborne-Mendel.	M & F	2 or 3%, 1 ccm. wkly. for 693 d	S.C	0		693 d.
Umeda, Masao, 1956	20 rats	Albino-mixed Saitama.	M & F	1 cc. of 5 gdl. dist. water once every wk.[4781] Total of 1100–2650 mg.	S.C. in back	0	7 survived 300 d. or more.	596 d.
Nothdurft, unpublished data.[4782]	40 rats			1% for 2 yrs	P.O	0	6 died	2 yrs.

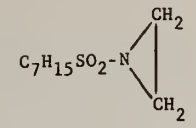
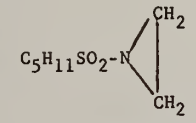
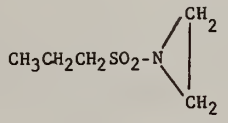
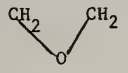
[4777] No pathological changes.
[4778] Experiment still in progress.
[4779] Glucoheptonate.
[4780] FD&C Red No. 3.
[4781] Heat sterilized before injection.
[4782] Recorded in "Toxikologische Daten . . . etc". 6: 1957.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
820. 9-ETHYL-3,4-BENZACRIDINE 								
Mashbits, F. D., 1955[4677]	25 mice[4753]	White		5–10 mg. in saline	S.C	Tumors[4783]		At least 18.5 mos.
821. 1′-ETHYL-1,2,5,6-DIBENZACRIDINE 								
Lacassagne, A., et al., 1955	20 mice	XVII		0.5 to 1 mg. in peanut oil 3 times at 1 mo. interval.	S.C	1	8 at 213 d. and 4 at 292 d.	443 d.
	30 mice	XVII		0.3% acetone 1 drop 2 wkly	Skin	9	19 at 185 d	381 d.
822. 3′-ETHYL'1,2,5,6-DIBENZACRIDINE 								
Lacassagne, A., et al., 1955	10 mice	XVII		0.5 to 1 mg. in peanut oil 3 times at 1 mo. interval.	S.C	0	6 at 111 d	316 d.

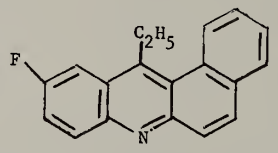
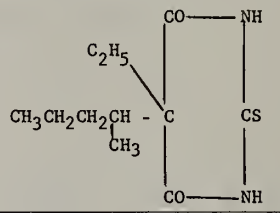
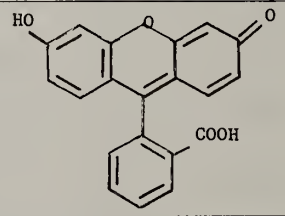
[4677] From abstract.
[4753] Age up to 3 mos.
[4783] 9 with pulmonary adenoma. 1 with pulmonary adenocarcinoma. No controls reported.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
				823. 1′-ETHYL-3,4,5,6-DIBENZACRIDINE 				
Lacassagne, A., et al., 1955	10 mice	XVII		One drop of a 0.3% soln. in acetone twice a wk.	Skin	Tumors[4784]	3 survived 227 d	472 d.
	20 mice	XVII		0.5 to 1 mg. in peanut oil 3 times at 1 mo. interval.	S.C	0	5 at 100 d	134 d.
	10 mice	XVII		0.37 acetone 1 drop 2 wkly	Skin	1 at 227 d	5 at 100 d. and 3 at 227 d.	472 d.
				824. 3′-ETHYL-3,4,5,6-DIBENZACRIDINE 				
Lacassagne, A., et al., 1955	10 mice	XVII		0.5 to 1 mg. in peanut oil 3 times at 1 mo. interval.	S.C	0	6 at 100 d	314 d.
	10 mice	XVII		0.3% acetone soln. 1 drop; 2 wkly	Skin	0	7 at 279 d	319 d.
				825. ETHYLENEIMINE 				
Walpole, A. L., et al., 1954	12 rats	Albino	6 ♂♂	Total of 2 mg./100 g. in total of 2.0 ml./100 g. arachis oil[4844] twice wkly. for 67 dosing d.	S.C. r. flank	Tumors[4785, 4786]		546 d.
	6 rats	Albino	F	Total of 1.0 mg./100 g. in total of 1.0 ml./100 g. water twice wkly. for 59 dosing d.	S.C. r. flank	Tumors[4787]	3 died at 361, 448, 537 d. respectively.	537 d. or more.
	6 rats	Albino	M	Total of 1.2 mg./100 g. in total of 1.2 ml./100 g. water twice wkly. for 59 dosing d.	S.C. r. flank	0[4788]	1 died at 517 d	540 d.

[4784] 1/3 227 day survivors with epthelioma.
[4785] 6 with injection site sarcoma.
[4786] 19 arachis oil controls with 1 injection site sarcoma, 1 injection site fibroma, 4 other-site tumors.
[4787] 2 with injection site sarcoma.
[4788] 1 renal transitional cell carcinoma.
[4844] 1 pleomorphic sarcoma.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
826. ETHYLENEIMINOSULFONYLHEPTANE 								
Walpole, A. L., et al., 1954	12 rats	Albino	6 āā	Total of 150 mg./100 g. in total of 1.2 ml./100 g. arachis oil[4644] twice wkly. for 54 dosing d.	S.C. r. flank	0	5 died 14th–593rd d.	601 d.
827. ETHYLENEIMINOSULFONYLPENTANE 								
Walpole, A. L., et al., 1954	12 rats	Albino	6 āā	Total of 90 mg./100 g. in total of 0.9 ml./100 g. arachis oil[4644] twice wkly. for 49 dosing d.	S.C. r. flank	0	3 females died at 424, 474, 504. d. respectively.	601 d.
828. ETHYLENEIMINOSULPHONYLPROPANE 								
Walpole, A. L., et al., 1954	12 rats	Albino	6 āā	Total of 125 mg./100 g. in total of 1.0 ml./100 g. arachis oil[4644] twice wkly. for 49 dosing d.	S.C. r. flank	0[4789,4790]		601 d.
829. ETHYLENE OXIDE 								
Jacobson, K. H., et al., 1956	3 dogs	Beagle	M	Avg. conc. of 100 ppm. of vapor in air for 6 mos.	Inhalation	0	100%	6 mos.
	3 dogs	Beagle	M	Avg. conc. of 292 ppm. of vapor in air 6 hrs./d., 5 d./wk., for 6 wks.	Inhalation	0	Throughout experiment.	At least 6 wks
	30 mice	White	F	Avg. conc. of 406 ppm. of vapor in air 6 hrs./d., 5 d./wk., for 6 wks.	Inhalation	0	24 died during 6 wk. exposure period.	At least 6 wks.
	30 mice	White	F	Avg. conc. of 98 ppm. of vapor for 6 mos. Then on day following this exposure, subjected to 6,100 ppm. of vapor.	Inhalation	0	8 died during 6 mos. period	6 mos.

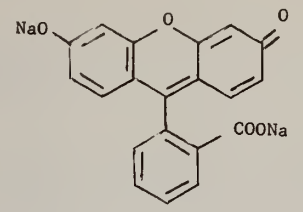
[4644] Sterilized (140° C for 1 hr.).
[4789] 1 mammary fibroadenoma.
[4790] 24 arachis oil controls with 3 non-injection site tumors.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
829. ETHYLENE OXIDE (Continued)								
	20 rats	White	M	Avg. conc. of 102 ppm. of vapor in air for 6 mos. Then on day following this exposure, subjected to 8,100 ppm. of vapor.	Inhalation	0	3 died during 6 mo. period.	6 mos.
	20 rats	White	M	Avg. conc. of 406 ppm. of vapor in air 6 hrs./d., 5 d./wk. for 6 wks.	Inhalation	0	13 died during 6 wk. exposure period.	At least 6 wks.
830. 10-ETHYL-3-FLUORO-5,6-BENZACRIDINE 								
Lacassagne, A., et al., 1955	20 mice	XVII	M & F	3 times 0.5 mg. in peanut oil at 1 mo. intervals.	S.C	0	12 at 90 d	274 d.
831. 5,5′ETHYL-(1-METHYLBUTYL)-THIOBARBITURIC ACID[4791] 								
Irwin, S., et al., 1956	4 dogs	Mongrel	M & F	25 mg./kg. 3 times/wk. for 30–34 d	I.V	0		34 d.
	5 dogs	Mongrel	M & F	25 mg./kg. daily for 30 d	I.V	0	1 died on 23 d	30 d.
832. FERROUS GLUCONATE $Fe[CH_2OH(CHOH)_4COO]_2$								
Haddow. A., and Horning, E. S., 1960.	20 mice	Stock		5 mg. wkly. for 13 wks	S.C	Tumors[4792]	12 at 12 mos	12 mos. to date.
833. FLUORESCEIN[4793] 								
Hansen, W. H., et al., 1960	50 rats[4794]	Albino	25 F, 25 M	0.25, 0.5, 1.0, 2.0, and 5.0% in diet for 90 d.	P.O	0		90 d.

[4791] Thiopental.
[4792] 1 fibroma, 1 thymoma, 1 thecoma.
[4793] D&C Yellow No. 7.
[4794] 10/group.

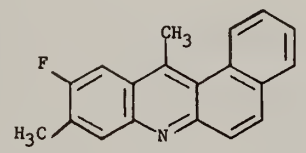
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment

834. FLUORESCEIN SODIUM[4796]



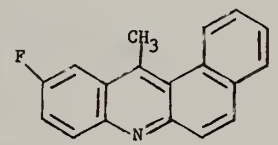
Umeda, M., 1954	Rats			1 cc. of 5 g./10 cc. dist. water once a wk.	S.C	Tumors[4795]	4 survived 466 d	At least 466 d.
Umeda, M., 1956	15 rats	Albino-mixed Saitama.	M & F	1 cc. of 5 g./10 cc. dist. water soln.[4761] 1–2 times a wk. Total of 3.0–5.35 g.	S.C. inj. in back	Tumors[4797]	8 lived 245 d. or more.	661 d.

835. 3-FLUORO-2,10-DIMETHYL-5,6-BENZACRIDINE



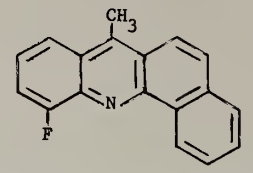
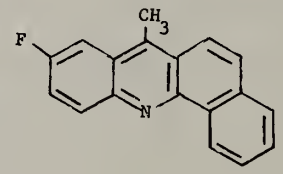
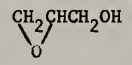
Zajdela, F. Buu-Hoi, Ng. Ph. 1955.	10 mice			0.5 mg. in peanut oil	S.C	0		300 d.
	10 mice			0.3% in acetone twice wkly	Skin	Tumors[4798]	2 at 189 d	

836. 3-FLUORO-10-METHYL-5,6-BENZACRIDINE



Zajdela, F. Buu-Hoi, Ng. Ph. 1955.	10 mice			0.3% in acetone twice wkly	Skin	Tumors[4798]	4 at 143 d	
	20 mice			0.5 mg. in peanut oil	S.C	Tumors[4799]	5 at 285 d	

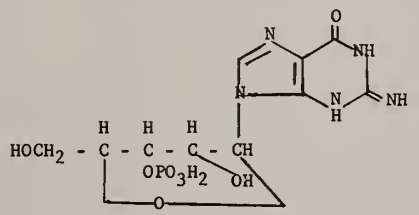
[4761] Heat sterilized before injection.
[4795] 1 polymorphoic cell sarcoma. (occurred in previous experiment which reported 1 sarcoma).
[4796] Uranine, Color Index No. 766.
[4797] 2 injection site polymorphic cell sarcomas at 248 and 301 days. (1 with hepatic cysticercus sarcoma). 2 with injection site fibroma. 1 mammary fibrosis (spontaneous).
[4798] 1 papilloma, 1 epithelioma.
[4799] 1 sarcoma.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
837. 1-FLUORO-10-METHYL-7,8-BENZACRIDINE 								
Zajdela, F. Buu-Hoi, Ng. Ph., 1955.	10 mice			0.5 mg. in peanut oil	S.C	Tumors[4800]	10 at 223 d	
838. 3-FLUORO-10-METHYL-7,8-BENZACRIDINE 								
Zajdela, F. Buu-Hoi, Ng. Ph., 1955.	10 mice			0.3% in acetone twice wkly	Skin	Tumors[4801]	5 at 126 d	
	20 mice			0.5 mg. in peanut oil	S.C	Tumors[4802]	7 at 150 d	
839. FRUCTOSE $C_6H_{12}O_6$								
Uekusa, T., 1955	20 mice			0.5 cc. of 25% soln	S.C	Tumors[4803]	6 survived more than 200 d.	More than 270 d.
Takizawa, N., et al., 1956	20 mice	Hybrid		0.5 cc. of 25%.[4804]	S.C	0	7 at 300 d	358 d.
840. GLUCOSE $C_6H_{12}O_6$								
Miyazaki, M., 1955	4 rats	Albino		10% in basal diet for 30 d	P.O	0		30 d.
Tagashira, Y., 1954	13 rats	Hybrid	M & F	1 cc. soln. in water, 20%, in dose of 0.5 cc. every other d. for 1 yr.[4805]	S.C	0	8 survived 300 d. or more.	401 d.
841. GLYCIDOL 								
Hine, C. H., et al., 1956	10 rats	Long-Evans	M	400 ppm. of vapor 7 hrs./d., 5 d./wk. for 50 exposures.	Inhalation	0	1 died between 49th and 50th exposure.	About 10 wks.

[4800] 2 sarcomas.
[4801] 3 papillomas, 3 epitheliomas.
[4802] 4 sarcomas.
[4803] 3 sarcomas, at 270 days.
[4804] Levulose.
[4805] Sterilized at 56° C. for 30 min. for 3 consecutive days before injection.

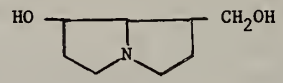
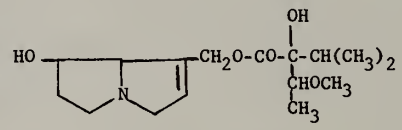
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
842. GOLD THIOGLUCOSE								
Talbert, G. B., and Hamilton, J. B., 1954.	32 rats	Wistar	M	1 inj.—0.5–1.6 mg./g. In sesame oil	I.P	0	12	60 d.
	Rats[4806]	Wistar	M & F	1 or 2 inj. of sesame oil, 0.6–1.4 mg./kg.	I.P	0	15	70 d.
	10 rats	Wistar	M	2 mg. in sesame oil—0.75 or 1.0 mg./g.	I.M	0	3—all receiving 1.0 mg. died.	60 d.
	48 mice	C3H	M	1 inj. of 0.8 mg./g	I.P	0	19	38 d.
	10 rats	Wistar	M	2 inj. in sesame oil—0.75 or 1.0 mg./g.	I.P	0	3, all receiving 1.0 mg. died.	60 d.
Liebelt, R. A., and Perry, J. H., 1957.	100 mice	CBA		0.18–0.75 mg. susp. in peanut oil/g. body wt.	I.P	0[4807]		50 d.
	50 mice	C57BL		0.18–1.2 mg. susp. in peanut oil/g. body wt.	I.P	0[4807]		50 d.
Liebelt, R., 1959	38 mice[4808]	RIII x CBA	F	0.4 mg./g. body wt. once	Inj	0[4809]		Up to 400 d.
	22 mice	RIII x CBA	M	0.4 mg./g. body wt. once	Inj	Tumors[4810, 4811].		
Gray, G. F., et al., 1960	57 mice[4812]	CBA	34 M, 23 F	0.4 mg./g. body wt. in saline soln	I.P	Tumors[4813, 4814].	All sacrificed at 13 mos. of age.	About 10 mos.
	47 mice[4816]	CBA	25 M[4770] 22 F	0.4 mg./g. body wt. in saline soln	I.P	Tumors[4816, 4817].	All sacrificed at 13 mos. of age.	About 10 mos.

843. GUANYLIC ACID

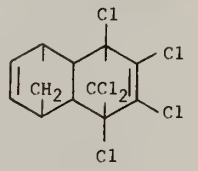


Haddow, A., and Horning, E. S., 1960.	20 mice	Stock		5 mg. wkly. for 25 wks	S.C	0	15 at 14 mos	14 mos. to date.

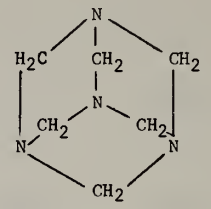
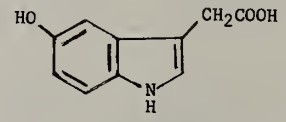
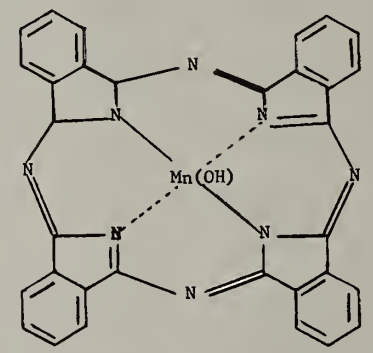
[4770] Castrated.
[4806] Castrated.
[4807] Bilateral hypotalamic lesions, no other pathology reported.
[4808] Virgin.
[4809] Mammary tumor latent period less for treated animals than controls.
[4810] 4 with mammary carcinoma.
[4811] 23 untreated controls negative.
[4812] Age 90–100 days.
[4813] 21 males with hepatomas. 2 females with hepatomas, 2 with adrenocortical adenomas.
[4814] Of 76 untreated controls. 7 males with hepatomas.
[4816] Castrated; age 90–100 days.
[4816] 5 males, 3 females with hepatomas and adrenocortical adenomas. Majority without hepatomas, with adrenocortical adenomas.
[4817] 3/31 castrated untreated controls with 3 hepatomas, 3 adrenocortical adenomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
				844. HELIOTRIDINE 				
Bull, L. B., and Dick, A. T., 1959.	10 rats	Hooded	M	150 mg./kg. twice wkly. for 4 wk. periods, alternating with 2 wk. rests, total dose 4.8 g./kg.	I.P	0		154 d.
	12 rats	Hooded	M	15 mg./kg. thrice wkly. for 9 injs., reduced to ½ dose, increased to double original dose for last 15 injs., total 345 mg.	I.P	0		192 d.
				845. HELIOTRINE 				
Bull, L. B., and Dick A. T., 1959.	15 rats	Hooded	M	0.42 LD_{50} at fortnightly intervals, up to total 3.41 LD_{50}.	I.P	0[4818]	1 died at 3, 37, 42, 46, 58, 71, and 87 d., 3 killed at 57 d., 5 killed at 113 d.	113 d.
	18 rats	Hooded	M	0.2 LD_{50} twice wkly., total dose 3.8–7.0 LD_{50}.	I.P	0[4819]	65–122 d	122 d.
	Rats	Hooded	M	0.11 LD_{50} twice wkly. for 1 mo., total dose 0.85 LD_{50}.	I.P	0[4820]	All killed at 114 d.	114 d.
	Rats	Hooded	M	0.11 LD_{50} twice wkly. for 3 mos., total dose 2.56 LD_{50}.	I.P	0[4820]	All killed at 114 d.	114 d.
	5 rats	Hooded	M	Total 0.85 LD_{50}, 193 d. rest period, resumed at 0.21 LD_{50} level, twice wkly. till death.	I.P	0[4821]	All died within 307–373 d.	373 d.
	5 rats	Hooded	M	Total 2.56 LD_{50}, 137 day rest period, resumed at 0.21 LD_{50} level, twice wkly. till death.	I.P	0[4822]	All died within 251–317 d.	317 d.
	57 rats	Hooded	M	0.1 LD_{50} thrice wkly. for 5 wks., off for 2 wks., resumed again twice wkly. with interspersed rest periods, total of 6–47 injs.	I.P	0[4823]	4 killed at 16, 23, 37, 51, 65, 79, 93, 107, 121, 135, 149, & 163 d., 5 at 191 d., respectively. 4 died.	191 d.

[4818] Controls with acute hepatic necrosis.
[4819] Acute hepatic necrosis.
[4820] Hepatic lesions.
[4821] Hepatic lesions.
[4822] Hepatic lesions with cysts.
[4823] Hepatic lesions with cholangeal hyperplasia at approx. 107 days.

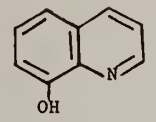
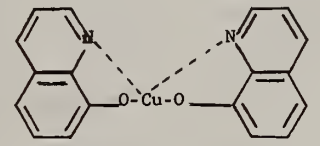
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
845. HELIOTRINE (Continued)								
	Rats	Hooded	M	38 injs. of 0.1 LD_{50} over 12 wk. period.[4824]	I.P	0[4825]	All sacrificed at 12 wks.	12 wks.
	12 rats	Hooded	M	15 mg./kg. thrice wkly. for 9 injs. reduced to ½ dose, increased to double original dose for last 15 injs., total 2.0–2.3 LD_{50}.	I.P	0[4826]	100% at 192 d	192 d.
Schoental, R., and Magee, P. N., 1959.	20 rats	Wistar	M & F	150–300 mg./kg. once	P.O. (stomach tube).	0[4827]	11 at 2 mos., 8 at 18 mos.	Up to 30 mos.
846. 1,2,3,4,10,10-HEXACHLORO-1,4,4a,5,8,8a-HEXAHYDRO-1,4,5,8-DIMETHANONAPHTHALENE[4828] 								
Crevier, M., et al., 1954	10 rats	Sprague-Dawley.	M	100 ppm. in the diet for 58 d	P.O	0[4829]		58 d.
	10 rats	Sprague-Dawley.	M	10 mg./kg. in corn oil every 48 hrs. for 58 d.	I.M	0[4829]		58 d.
Treon, J. F., and Cleveland, F. P., 1955.	2 dogs	Beagles	M & F	0.9–1.8[4830] mg./kg. body wt. 6 d./wk. up to 6.7 mos.	P.O	0	1 died at 5.7 mos.	6.7 mos.
	8 dogs	Beagles	4 M, 4 F	1 or 3 ppm. in diet 6 d./wk. for 15.6 mos.[4830]	P.O	0[4831]	100%	15.6 mos.
	1 dog	Beagle	M	2.1–3.1[4830] mg./kg. body wt. 6 d./wk. for 3.2 mos.	P.O	0	3.2 mos	3.2 mos.
	Rabbits			<12 mg./d. in ultrasene for 2 hrs./d., 5 d./wk. for 10 wks.[4830]	Skin	0	High mortality	10 wks.
	Rabbits			25–50 mg./d. in vegetable oil 2 hrs./d., 5 d./wk. for 10 wks.[4830]	Skin	0		10 wks.
	Rabbits			100–300 mg./d. as dry powder for 2 hr./d., 5 d./wk. for 10 wks.[4830]	Skin	0		10 wks.
	Rats			2.5, 5.0, 75.0 ppm. in diet for 6 mos.[4830]	P.O	0		6 mos.
	120 rats	Carworth	60 F, 60 M	2.5, 12.5, or 25.0 ppm. in diet for 2 yrs.[4830]	P.O	0	Few deaths	2 yrs.

[4824] Subtotal hepatectomy immediately after treatment.
[4825] Hepatic lesions (decreased regeneration).
[4826] Hepatic lesions.
[4827] Subacute and chronic hepatic lesions.
[4828] Commercially known as Aldrin.
[4829] No pathology reported.
[4830] Recrystallized Aldrin, 95% pure.
[4831] Hepatic lesions and renal tubular degeneration noted at 3 ppm.

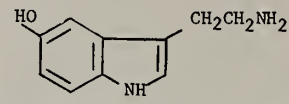
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
847. HEXAMETHYLENETETRAMINE[4832] 								
Watanabe, F., and Sugimoto, S., 1955.	20 rats			1–2 cc. of 9–23% aqueous soln. for ½ of experiment, then 1–2 cc. of 35–40% aqueous soln. all given 1–2 times a wk.	S.C	Tumors[4833]	14 survived 400 d. or more.	553 d.
848. 5-HYDROXYINDOLACETIC ACID 								
MacDonald, R. A., 1959	6 rats	Sprague-Dawley.	M	8 mg. twice daily for 73 d	S.C	0		73 d.
849. HYDROXYMANGANESE PHTHALOCYANINE 								
Haddow, A., and Horning, E. S., 1960.	20 mice	Stock		0.5 mg. wkly. for 8 wks	S.C	0	17 at 9 mos	9 mos. to date.

[4832] "Urotropin".

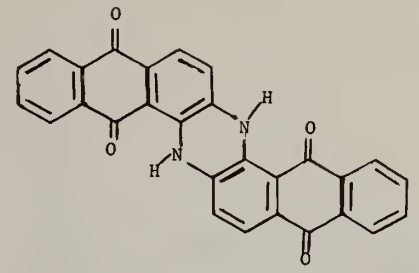
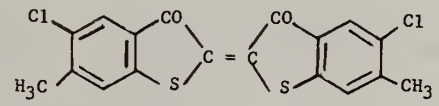
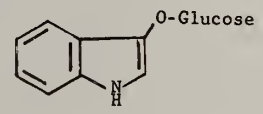
[4833] 7 sarcomas, 1 adenoma in 412–553 day survivors. 4 spindle cell sarcomas, 1 fibrosarcoma, 1 adenoma, 2 polymorphic cell sarcomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
850. 8-HYDROXYQUINOLINE 								
Boyland, E., and Watson, G., 1956.	20 mice			20% in cholesterol pellet	Bladder implant, lumen of bladder tied off.	Tumors[4834, 4835].	13 at 40 wks	40 wks.
Salaman and Roe, 1956	20 mice	Albino "S" strain.		6 wkly. applications of 0.5% soln. in acetone (total dose—9.0 mg.)[4836]	Skin	1 (with 2 pap.).	14 at about 27 wks.	Approx. 29 wks.
Allen, M. J., et al., 1957	20 mice			1 part/4 parts cholesterol in 9–11 mg. pellet implant.	Urinary bladder.	Tumors[4837, 4838].	13 at 40 wks	At least 40 wks.
Umeda, Masao, 1957	12 hamsters		M	0.05 cc. of 10 g./10 cc. dist. water soln.[4839] once or twice a wk. Total of 450 mg.	Intratesticular inj. (r. testicle).	0	5 survived 200 d. or more.	504 d.
Clayson, D. B., et al, 1958	25 mice	Albino		12.5% in compressed cholesterol pellet.	Implanted into the lumen of bladder.	Tumors[4841, 4842].	Killed after 25 wks., 7 killed after 35 wks.	40 wks.
Haddow, A., and Horning, E. S., 1960.	20 mice	Stock		1 mg. wkly. for 31 wks	S.C	0[4843]	17 at 15 mos	15 mos. to date.
851. 8-HYDROXQUINOLINE COPPER COMPLEX 								
Haddow, A., and Horning, E. S., 1960.	20 mice	Stock		0.1 mg. wkly. for 39 wks	S.C	Tumors[4844]	14 at 10 mos	10 mos. to date.

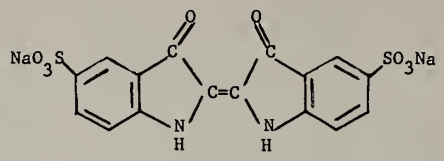
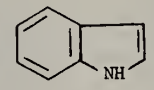
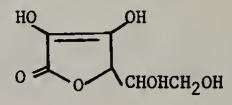
[4834] 4 urinary cystic carcinomas, 2 papillomas.
[4836] 25 cholesterol controls negative.
[4836] 18 weekly applications of 0.5% croton oil in acetone. Alternating (3–4 day intervals) with treatment; begun 25 days after first treatment.
[4837] 2 with papillomas or adenoma, 3 with urinary cystic carcinoma.
[4838] 1/24 cholesterol controls with urinary cystic carcinoma.
[4839] As the sulfate.
[4840] Heat sterilized before injection.
[4841] 6 carcinomas (2 invasive, 4 noninvasive).
[4842] 5/55 cholesterol controls with carcinomas, (noninvasive).
[4843] 1 hepatoma.
[4844] 1 pleomorphic sarcoma.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
852. 5-HYDROXYTRYPTAMINE[4845] 								
Hedinger, C., and Langemann, H., 1955.	11 rats			In saline 250–1000 μMol/kg	S.C		97 d	
	11 rats (75–120 g. body wt.).	Albino		250–1000 μMol/kg. in repeated doses.[4707]	S.C	0[4846]	Sacrificed at 27, 40, 54, 71, 97 d.	97 d.
Erspamer, V., et al., 1956	10 rats			1 mg./kg. daily for 91 d	S.C	0		92 d.
	5 rats			1 mg./kg. daily for 109 d	S.C	0		110 d.
	5 rats			1 mg./kg. daily for 68 d	S.C	0		69 d.
	6 rats			15 mg./kg. daily for 40 d	S.C	0		41 d.
	4 rats			5 mg./kg. daily for 30 d	S.C	0		31 d.
Allen, M. J., et al., 1957	20 mice			1 part[4847]/4 parts cholesterol in 9–11 mg. pellet implant.	Urinary bladder.	0[4838,4848]	10 at 52 wks	52 wks.
Fiore-Donati, L., and Erspamer, V., 1957.	6 rats	Albino	M & F	15 mg./kg. daily for 40 d	S.C	0[4849]	All sacrificed	40 d.
	5 rats	Albino	M & F	5 mg./kg. daily for 30 d	S.C	0[4849]	All sacrificed	30 d.
	15 rats[4850]	Albino	M & F	1 mg./kg. daily for 30, 68, 91 d. respectively.	S.C	0[4849]	5 sacrificed at 30, 68, & 91 d.	91 d.
Heidinger, C., and Veraguth, F., 1957.	11 rats	Albino		Increasing dose from 250–1000 μMol/kg. body wt. (total 3250–28250 μMol/kg.) in saline.	S.C	0	Animals were killed at intervals.	27–97 d.
MacDonald, R. A., et al., 1958.	11 rats	Sprague-Dawley.	F	2–8 mg. twice daily up to 353 d	S.C	0[4851]	1 died	353 d.
	12 rats	Sprague-Dawley.	F	2–8 mg. twice daily up to 353 d., fed choline deficient diet.	S.C	0[4852]	7 died	353 d.
MacDonald, R. A., 1959	12 rats	Sprague-Dawley.	M	3.36 mg. daily for 90 consecutive d., tryptophan and niacin deficient diet.	S.C	0		90 d.
	12 rats	Sprague-Dawley.	M	3.36 mg. daily for 90 consecutive d	S.C	0		90 d.
	6 rats	Sprague-Dawley.	M	3.36 mg.[4847] twice daily for 73 d	S.C	0[4853]		73 d.

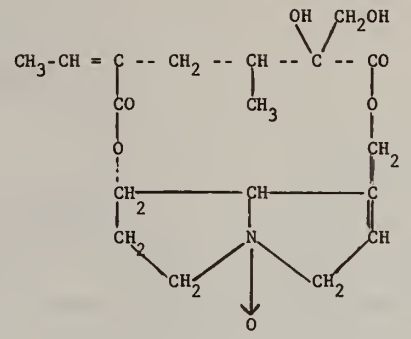
[4707] As hydrochloride.
[4838] 1/24 cholesterol controls with urinary cystic carcinoma.
[4845] "Serotonin".
[4846] Renal pathology study (cortical necrosis and scarification).
[4847] As the creatinine sulfate complex.
[4848] 1 urinary cystic papilloma or adenoma.
[4849] Bilateral renal lesions.
[4850] 5/group.
[4851] Structural alteration.
[4852] Other pathology reported.
[4853] Injection site fibrotic lesions.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
853. INDANTHRENE BLUE RS 								
Klinke, unpublished data[4782]	85 rats			10–15 mg. daily as 0.1% in food for duration.	P.O	0		
Nothdurft, unpublished data.[4782]	40 rats			1% in food for 2 yrs	P.O	0	4 died	2 yrs.
Umeda, M., 1956	12 rats			2 cc. of 2.5 g./10 cc. once a mo	S.C	0	6 at 300 d	At least 300 d.
	21 rats			0.1% in food, wheat	P.O	0	8 at 400 d	At least 400 d.
854. INDANTHRENE RED VIOLET RH 								
Umeda, M., 1956	10 rats			2 cc. of 1.5 g./10 cc. twice a mo	S.C	0	5 at 200 d	At least 200 d.
Umeda, M., 1956	16 rats			0.5% in food, wheat	P.O	0	7 at 300 d	At least 300 d.
855. INDICAN 								
Ehrhart, H., and Stich, W. I., 1957.	80 mice	RFH White		In water soln. (1:200) 5 mg./20 g. mouse, total of 20 injs., 1 every 8 hrs.		Tumors[4854]	49 at 177 d	360 d.
Ehrhart, H., and Stich, W., 1958.	80 mice	RFH Albino		5 mg. every 20 g. body wt. every 8 d.		Tumors[4855]	49 at 177 d	360 d.
Ehrhart, H., and Stich, W., 1957.	50 mice	RFH Albino		1% in 50 propylene glycol (0.5 mg. every 3–4 d.) total 20 mg./20 g. mouse.		Tumors[4856]	20% died in the 1st 4 wks.	360 d.

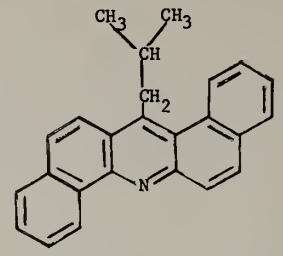
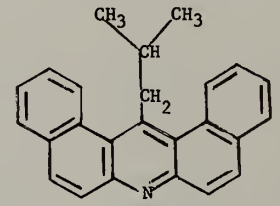
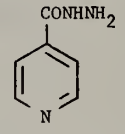
[4782] Recorded in "Toxikologische Daten. . .etc". 6: 1957.
[4854] 14%: 7 with myeloid leukemias; 15 with round cell hepatic infiltration; 4 with splenic lymphoid hyperplasia.
[4855] 1 with myeloid leukemia, mediastinal adenomas.
[4856] 6 with myeloid leukemia at 140–360 days.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
856. INDOGOTIN I[4857] 								
Nothdurft, unpublished data.[4782]	40 rats			1%	P.O	0	7 died	
Oettel, unpublished data[4782]	20 rats				S.C	Tumors[4858]		At least 7 mos.
857. INDOLE 								
Roe and Salaman, 1955	20 mice	Albino "S" strain.	M	2 wkly. applications of 0.3 ml. of 2% soln. in acetone (Total dose: 12.0 mg.[4859]).	Skin	2 (skin tumors).	20 at 22 wks	At least 23 wks.
Erhart, H., and Stich, W., 1957.	50 mice	Albino RFH		1% indole in 50% propylene glycol 0.5 mg. every 3–4 d. or 1 mg. wkly. during 140 d.	S.C	Tumors[4860]	20% died during 1st 4 wks.	360 d.
	50 mice	RFH		1% in 50% propylene glycol 0.5 mg. every 3–4 d., 1 mg. wkly. for 140 d., 20 mg. for 20 g. body wt., total dose.	S.C	Tumors[4861]	80% at 4th wk	360 d.
858. IRON ASCORBATE 								
Haddow, A., and Horning, E. S., 1960.	20 mice	Stock		0.2 cc. (0.3 mg. Fe) wkly. for 43 wks.	S.C	0	11 at 12 mos	12 mos. to date.

[4782] Recorded in "Toxikologische Daten . . . etc". 6: 1957.
[4857] FD&C Blue No. 2.
[4858] 1 axillary tumor.
[4859] 18 weekly applications of 0.3 ml. 0.5% croton oil in acetone begun 4 wks. after first treatment.
[4860] 15% myeloid leukemia at 6 mos.; 100 controls negative.
[4861] 9 myelogenous leukemia.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
859. ISATIDINE 								
Schoental, R., et al., 1954	5 rats	Wistar	M & F	2.0 mg. in 0.2 ml. tricaprylin, one inj. then 0.5% soln. in alcohol 3 times wkly. for 15 mos. by application.	I.P. and Skin	0[4862]	11 to 18 mos	$18\frac{1}{2}$ mos.
	7 rats	Wistar	M & F	0.5 mg./ml.—0.03 mg./ml. in drinking water ad lib, 3 d. per wk.[4863]	P.O	Tumors[4864]	14 to 21 mos	Over 21 mos.
	22 rats	Wistar	M & F	0.05 mg./ml. and then 0.03 mg./ml. in drinking water ad lib, 3 d. wkly. for 20 mos.	P.O	Tumors[4865]		At least 20 mos.
Schoental, R., and Head, M. A., 1957.	6 rats	Wistar	M	5 x 40–50 mg./kg. body wt. in 2 mos., high casein diet.	I.P	0[4866]	100% at 10 mos	25 mos.
	12 rats	Wistar	6 āā	5 x 40–50 mg./kg. body wt. in 2 mos.	I.P	0[4867,4868]	6 at 12 mos	Up to $2\frac{1}{2}$ yrs.
	7 rats	Wistar	M	0.03 mg./ml. as drinking water, betaine supplemented diet for about 1 yr.	P.O	0[4869,4870]	1 at 1 yr. & 10 mos.	About 1 yr. & 10 mos.
	3 rats	Wistar	M	0.2 mg./ml. as drinking water twice wkly. for 1 mo., betaine supplemented diet.	P.O	0	1 died before 7 wks.	4 mos.
	3 rats	Wistar	M	0.2 mg./ml. as drinking water	P.O	0	All died within 7 wks.	Less than 7 wks.
	8 rats	Wistar	3 F & 5 M	5 x 25–50 mg./kg. body wt. within 2 mos.	I.P	0[4871,4872]	100% at 11 mos	Up to 29 mos.

[4862] Hepatic nodule (probable hepatoma).
[4863] 0.5% choline in drinking water.
[4864] 4 with hepatomas.
[4865] 10 with hepatomas, 1 with hepatic carcinoma (metastatic).
[4866] 2 with hepatic nodules (1 tumor-like, 1 probable hepatoma).
[4867] 1 with hepatic nodules, 1 with probable hepatoma.
[4868] 16 untreated controls with 1 mammary fibroadenoma, 1 metastatic ovarian tumor.
[4869] 2 with probable hepatic tumors. 2 with probable hepatomas.
[4870] 3 untreated controls negative.
[4871] Hepatic nodular hyperplasia.
[4872] 16 untreated controls with 1 mammary fibroadenoma, 1 metastatic ovarian tumor.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
860. 10-ISOBUTYL-1,2,5,6-DIBENZACRIDINE 								
Lacassagne, A., et al., 1955	10 mice	XVII		0.5 to 1 mg. in peanut oil 3 times at 1 mo. interval.	S.C	0	5 at 211 d	401 d.
861. 10-ISOBUTYL-3,4,5,6-DIBENZACRIDINE 								
Lacassagne, A., et al., 1955	10 mice	XVII		0.3% acetone 1 drop 2 wkly	Skin	0	9 at 227 d	274 d.
	10 mice	XVII		0.5 to 1 mg. in peanut oil 3 times at 1 mo. interval.	S.C	0	5 at 135 d	256 d.
862. ISONICOTINIC ACID HYDRAZIDE[4873] 								
Sano, S., 1954	5 rabbits	Domestic		5 mg./kg., 8–12 wks		0		At least 12 wks.
	1 rabbit	Domestic		20 mg./kg. for 5 wks		0		
	3 rabbits	Domestic		200 mg./kg. for 10 d		0		12 wks.
Zbinden, G., and Studer, A., 1955.	16 rats	Wistar		10 mg./kg./daily in food	P.O	0		310 d.
Juhasz, J., et al., 1957	45 mice			0.2 ml. 1% in saline every other d. 8 times then 0.2 ml. of 1.5% soln. 22 times, total dose 82 mg.	I.P	Tumors[4874]	10 at 7½ mos	7½ mos.

[4873] Isoniazid.

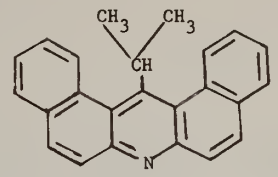
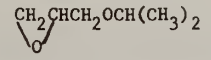
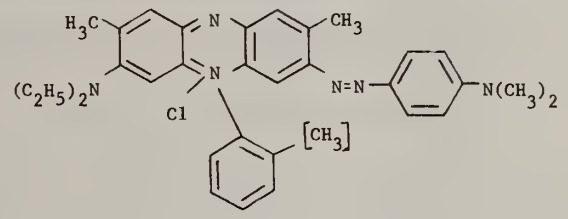
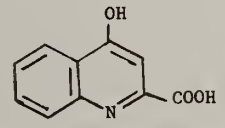
[4874] 14 with pulmonary adenomas, lymphoid leukemia, myeloid leukemia, myelocytic leukemia, hepatic reticulum cell sarcoma. 50 controls negative.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
862. ISONICOTINIC ACID HYDRAZIDE (Continued)								
Juhasz, J., et al., 1957	Mice[4876]	White		Dissolved in phyl. saline—8 times (every second d.) 1% soln., 0.2 ml(=2 mg.) 10 times (every second d.) 1.5% soln., 0.2 ml(=3 mg.) at 1 mo. interval, 12 times (every second d.) 1.5% soln., 0.2 ml(=3 mg.), total dose, 30 times, 82 mg.	I.P. inj	Tumors[4876]	45 treated and 50 untreated, (5 treated animals were lost during the first 3 wks.)	7½ mos. (all killed).
	50 mice[4877]	Albino		1% in saline—0.2 ml. every other d. for 8 injs., 1.5% in saline—0.2% ml. every other d. for 10 injs., rest 1 mo., 1.5% in saline—0.2 ml. every other d. for 12 injs.—total dose of 82 mg.	I.P	Tumors[4878]	45 at 7½ mos	7½ mos.
Mori, K., and Yasuno, A., 1959.	25 mice	D-d albino	F	1.5–3 mg. and olive oil in powdered diet daily.	P.O	Tumors[4879, 4880]	10 died in 3 mos	210 d.
	Mice	D-d albino	F	5 g./kg. of diet, daily intake 1.5 g. diet/mouse/d.	P.O	Tumors[4881]		At least 100 d.
Kazuo, M., et al., 1960	Mice			0.25% in diet for 4 mos	P.O	Tumors[4882]	8 at 7 mos	7 mos.
	Mice			0.25% in diet for 3 mos	P.O	Tumors[4882]	8 at 7 mos	7 mos.
	Mice[4883]	dd	F	0.06% I.N.H. in diet (mixture of Oriental diet M and polished rice (1:2)). Green vegetables were given to the mice from time to time, and water freely.	P.O	Tumors[4884]	10 at 7 mos	7 mos.
	Mice[4883]	dd	F	0.1% I.N.H. in diet (mixture of Oriental diet M and polished rice (1:2)). Green vegetables were given to the mice from time to time, and water freely.	P.O	Tumors[4885]	10 at 7 mos	7 mos.
	Mice[4883]	dd	F	0.125% I.N.H. in diet (mixture of Oriental diet M and polished rice (1:2)). Green vegetables were given to the mice from time to time, and water freely.	P.O	Tumors[4886]	10 at 7 mos	7 mos.
	Mice[4883]	dd	F	0.25% I.N.H. in diet (mixture of Oriental diet M and polished rice (1:2)). Green vegetables were given to the mice from time to time, and water freely.	P.O	Tumors[4887]	7 at 7 mos	7 mos.

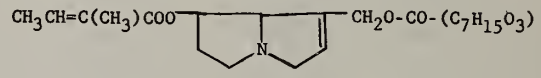
[4875] 50 treated, 50 untreated.
[4876] 7 with pulmonary adenomas, 1 with hepatic carcinomas, 3 with lymphoid leukemias, 2 with histiocytic leukemias, 1 with myeloid leukemia.
[4877] Age: 2 months; weight: 20 gms.
[4878] 7 pulmonary adenomas, 3 lymphocytic leukemias, 1 myelogenous leukemia, 2 histiocytic leukemias, 1 hepatic reticulum cell sarcoma.
[4879] 9 with pulmonary adenomas at 134–210 days.
[4880] 9/60 untreated controls with pulmonary adenomas at 1–1½ years.
[4881] Pulmonary tumors at 100 days.
[4882] 50% with pulmonary tumors (0.75 tumors/mouse). 5% of 20 seven-month surviving controls with pulmonary tumors.
[4883] 15–20/group; age, 1.5–2 months.
[4884] 50% with pulmonary tumors (0.9 tumors/mouse). 3% of 36 seven-month surviving controls with pulmonary tumors.
[4885] 60% with pulmonary tumors (1.0 tumors/mouse). 3% of 36 seven-month surviving controls with pulmonary tumors.
[4886] 70% with pulmonary tumors (1.7 tumors/mouse). 3% of 36 seven-month surviving controls with pulmonary tumors.
[4887] 100% with pulmonary tumors (1.85 tumors/mouse). 3% of 36 seven-month surviving controls with pulmonary tumors.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
862. ISONICOTINIC ACID HYDRAZIDE (Continued)								
	Mice			0.1 ml.—2% aqueous soln. every two d. for 18 wks.	S.C	Tumors[4888]	15 at 7 mos	7 mos.
	Mice			0.25% in diet for 7 mos	P.O	Tumors[4889]	7 at 7 mos	7 mos.
	Mice[4883]	dd	F	0.01% I.N.H. in diet (mixture of Oriental diet M and polished rice (1:2)). Green vegetables were given to the mice from time to time, and water freely.	P.O	Tumors[4890]	12 at 7 mos	7 mos.
	Mice			0.25% in diet for 2 mos	P.O	Tumors[4890]	5 at 7 mos	7 mos.
Mori, K., et al., 1960	Mice	dd	F	0.25% in diet for 7 mos	P.O	Tumors[4892, 4893]	7 at 7 mos., killed	7 mos.
	Mice	dd	F	0.125% in diet for 7 mos	P.O	Tumors[4893, 4894]	10 at 7 mos., killed	7 mos.
	Mice	dd	F	0.1% in diet for 7 mos	P.O	Tumors[4893, 4895]	10 at 7 mos., killed	7 mos.
	Mice	dd	F	0.06% in diet for 7 mos	P.O	Tumors[4893, 4896]	10 at 7 mos., killed	7 mos.
	Mice	dd	F	0.01% in diet for 7 mos	P.O	Tumors[4893, 4897]	12 at 7 mos., killed	7 mos.
	Mice	dd	F	0.25% in diet for 2 mos., basal diet for next 5 mos.	P.O	Tumors[4898, 4899]	5 at 7 mos., killed	7 mos.
	Mice	dd	F	0.25% in diet for 3 mos., basal diet for next 4 mos.	P.O	Tumors[4899, 4900]	8 at 7 mos., killed	7 mos.
	Mice	dd	F	0.25% in diet for 4 mos., basal diet for next 3 mos.	P.O	Tumors[4899, 4901]	8 at 7 mos., killed	7 mos.
	Mice	dd	F	0.1 ml. of 2.0% aqueous soln. every 2 d. for 18 wks.	S.C	Tumors[4902, 4903]	15 at 7 mos., killed	7 mos.
Vialler, J., and Casanova, F., 1960.	35 mice			6 d./wk. 30 min. exposure to aerosol of 1½% soln.	Inhalation	0[4904]	4 at 6 mos	6 mos.
	138 mice	Swiss white	M & F	2 injs. of 1½% soln. in physiological saline, avg. dose 1800 mg. per mo. Total dose of 12.6 gms. in 7 mos.	I.P. & S.C	0	43 at 5 mos., 32 at 6 mos., 24 at 7 mos.	7 mos.

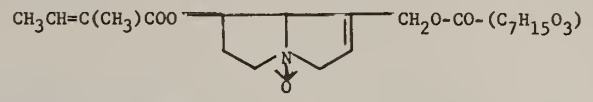
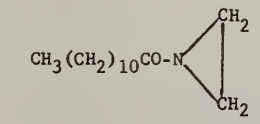
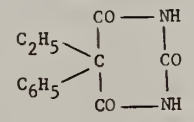
[4883] 15–20/group; age, 1.5–2 months.
[4888] 53% with pulmonary tumors (0.87 tumors/mouse). 11.1% of 9 seven-month surviving saline controls with pulmonary tumors (0.1 tumor/mouse).
[4889] 100% with pulmonary tumors (1.86 tumors/mouse). 5% of 20 seven-month surviving controls with pulmonary tumors.
[4890] 12% with pulmonary tumors (0.33 tumors/mouse). 3% of 36 seven-month surviving controls with pulmonary tumors.
[4891] 40% with pulmonary tumors (0.8 tumors/mouse). 5% of 20 seven-month surviving controls with pulmonary tumors.
[4892] 7 with pulmonary adenoma at seven months.
[4893] 1/44 untreated controls with pulmonary adenoma at seven months.
[4894] 7 with pulmonary adenoma (5 multiple) at seven months.
[4895] 6 with pulmonary adenoma (4 multiple) at seven months.
[4896] 5 with pulmonary adenoma (4 multiple) at seven months.
[4897] 1 with pulmonary adenoma (multiple) at seven months.
[4898] 2 with pulmonary adenoma (multiple) at seven months.
[4899] 1/20 untreated controls with pulmonary adenoma at seven months.
[4900] 4 with pulmonary adenoma (1 multiple) at seven months.
[4901] 4 with pulmonary adenoma (2 multiple) at seven months.
[4902] 8 with pulmonary adenomas (3 multiple) at seven months.
[4903] 1/8 saline controls with pulmonary adenoma at seven months.
[4904] Spontaneous lymphoma.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
863. 10-ISOPROPYL-3,4,5,6-DIBENZACRIDINE 								
Lacassagne, A., et al., 1955	10 mice	XVII		0.5 to 1 mg. in peanut oil 3 times at 1 mo. interval.	S.C	0	10 at 196 d. & 5 at 269 d.	356 d.
	20 mice	XVII		0.3% acetone 1 drop 2 wkly	Skin	2	14 at 144 d. & 2 at 337 d.	409 d.
864. ISOPROPYL GLYCIDYL ETHER 								
Hine, C. H., et al., 1956	10 rats	Long-Evans	M	400 ppm. of vapor 7 hrs./d., 5 d./wk. for 50 exposures.	Inhalation	0		About 10 wks.
865. JANUS GREEN[4905] 								
Nieper, H. A., and Druckrey, H., 1957.	15 rats	BDI, BDIII		5 mg. every two wks. during 802 d., total dose 33 mg./rat.	S.C	0		902 d.
	20 rats	BDI, BDIII		20 mg. daily with food (during 670 d.), total dose 8.9 g./rat.	P.O	0		From 650 to 1034 d.
866. KYNURENIC ACID 								
Allen, M. J., et al., 1957	20 mice			1 part/4 parts cholesterol in 9–11 mg. pellet implant.	Urinary bladder	0[4906,4907]	11 at 40 wks	At least 40 wks.

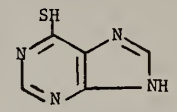
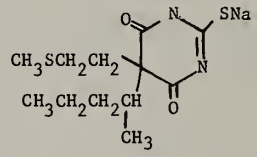
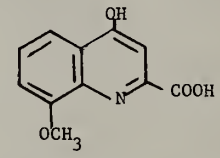
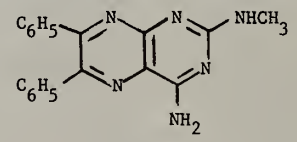
[4905] Chromatographically pure.
[4906] 1 urinary cystic carcinoma.
[4907] 1/24 cholesterol controls with urinary cystic carcinoma.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
867. LACTOSE $C_{12}H_{22}O_{11}$								
Arakawa, S., 1955	60 mice	Mixed		0.5 cc. of 25% soln. once a d	S.C	Tumors[4908, 4909].	23 survived more than 250 d.	476 d.
868. LASIOCARPINE 								
Schoental, R., and Magee, P. N., 1957.	14 rats	Porton	F	75 mg./kg. once, on low protein diet.	P.O. (stomach tube).	0	1 at 8 mos	11 mos.
	5 rats	Porton	F	50 mg./kg. body wt.—single dose.[4910]	P.O	0	2 at 11 mos	11 mos.
	6 rats	Porton	2 M, 4 F	101–150 mg./kg. once	P.O (stomach tube).	0	1 at 3 mos	3 mos.
	43 rats	Porton	25 M, 18 F	75–100 mg./kg. once	P.O. (stomach tube).	0	16 at 13 mos	Experiment still in progress.
	17 rats	Porton	10 M, 7 F	50–74 mg./kg. once	P.O. (stomach tube).	0	12 at 13 mos	Experiment still in progress.
Bull, L. B., and Dick, A. T., 1959.	12 rats	Hooded	M	15 mg./kg. thrice wkly., reduced to $\frac{1}{2}$ dose after 9 injs., total 4.0–5.2 LD_{50}.	I.P	0[4911]	6 at 124 d	128 d.
Schoental, R., and Magee, P. N., 1959.	36 rats	Wistar	M & F	50–75 mg./kg. once	P.O (stomach tube).	0[4912]	21 at 18 mos	Up to 30 mos.
	81 rats	Wistar	M & F	80–100 mg./kg./once	P.O. (stomach tube).	0[4912]	21 at 2 mos	Up to 30 mos.
	Rats	Wistar	M & F	100 mg./kg./once	P.O. (stomach tube).	0[4913]	Killed at intervals of 2–3 d. to 10 mos.	30 mos.
	7 rats	Wistar	M & F	110–130 mg./kg. once	P.O. (stomach tube).	0[4912]	1 at 2 mos	At least 2 mos.
Schoental, R., 1959	Rats[4914]	Wistar of Porton strain.	F	25–40 mg. in 5–10 doses of 5–10 mg. twice wkly. or oftener.	P.O (stomach tube).	0[4916]		At least 1 yr.

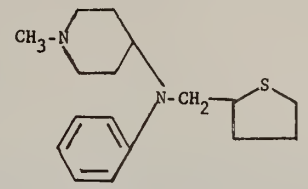
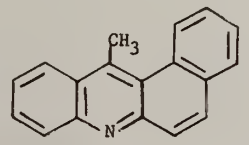
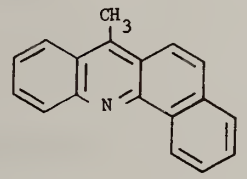
[4908] 5 fibroblastic sarcomas at 307–476 days.
[4909] Saline controls negative.
[4910] Low protein diet.
[4911] Chronic hepatic lesions.
[4912] Subacute and chronic hepatic lesions.
[4913] Hyperplastic hepatic nodules at $6\frac{1}{2}$ months.
[4914] Lactating.
[4916] Death of litter mates within 7 weeks due to hepatic lesions.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
869. LASIOCARPINE N-OXIDE 								
Bull, L. B., and Dick, A. T., 1959.	Rats	Hooded	M	0.4 LD_{50}; at 3 wk. intervals, up to 8 doses.	I.P	0	4 died at 117, 138, 188 and 211 d., respectively.	At least 211 d.
	Rats	Hooded	M	0.4 LD_{50} at 4 wk. intervals, 6 doses	I.P	0	All sacrificed at 170 d.	170 d.
Schoental, R., and Magee, P. N., 1959.	20 rats	Wistar	M & F	40–99 mg./kg. once	P.O. (stomach tube).	0[4912]	14 at 18 mos	Up to 30 mos.
870. LAURYLETHYLENEIMINE 								
Walpole, A. L., et al., 1954	12 rats	Albino	6 āā	12.5 mg./100 g. in 0.1 ml./100 g. arachis oil[4644] once.	S.C. r. flank	Tumors[4916, 4917].		531 d.
	12 rats	Albino	6 āā	Total of 100 mg./100 g. in total of 2.5 ml./100 g. arachis oil[4644] twice wkly. for 32 dosing d.	S.C. r. flank	Tumors[4918, 4919].	7 died from 232–741 d.	741 d. or more.
871. LUMINAL[4920] 								
Roe & salaman, 1955	20 mice	Stock albino "S" strain.	M	2 wkly. applications of 0.3 ml. of 2% soln. in acetone (Total dose: 12.0 mg.[4921]).	Skin	1 (skin tumor).	19 at 22 wks	At least 23 wks.
	20 mice	Stock albino "S" strain.	M	0.3 ml. of 2% soln. in acetone, wkly. for 15 wks. (Total dose: 90.0 mg.[4922])	Skin	1 (skin tumor).	All alive at 18 wks.	At least 19 wks.
872. MALTOSE $C_{12}H_{22}O_{11}$								
Takizawa, N., et al., 1957	20 mice	Hybrid		0.5 cc. of 25% soln. every d	S.C	Tumors[4923]		413 d.

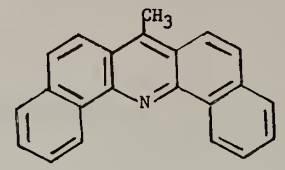
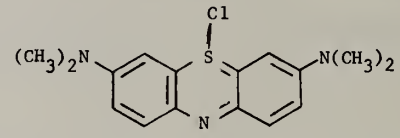
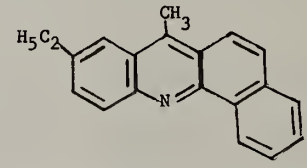
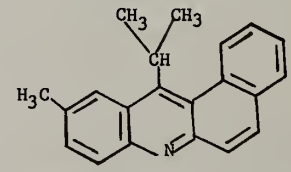
[4644] Sterilized (140° C for 1 hr.).
[4912] Subacute and chronic hepatic lesions.
[4916] 1 male with injection site sarcoma.
[4917] No comparable control.
[4918] 1 injection site sarcoma; 1 invasive cervical sarcoma; 1 injection site mammary carcinoma; 1 abdominal wall sarcoma; 1 mammary fibroadenoma.
[4919] 24 arachis oil controls with 3 other-site tumors.
[4920] Phenobarbitone.
[4921] 18 weekly applications of 0.3 ml. 0.5% croton oil in acetone; begun 4 weeks after first treatment.
[4922] 18 weekly applications of 0.3 ml. 0.5% croton oil in acetone alternated (3–4 day intervals) with treatment.
[4923] 1 spindle cell sarcoma.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
873. 6-MERCAPTOPURINE 								
Salaman and Roe, 1956	25 mice	Albino "S" strain.		10 thrice wkly. applications of 0.33% soln. in 50% aqueous carbowax 300 (total dose 10 mg.)[4924].	Skin	0	18 at about 28 wks.	Approx. 30 wks.
874. METHITURAL[4925] 								
Irwin, S., et al., 1956	4 dogs	Mongrel	M & F	40 & 45 mg./kg. 3 times/wk. for 30–34 d.	I.V	0		34 d.
	3 dogs	Mongrel	M & F	40 & 45 mg./kg. daily for 30 d	I.V	0		30 d.
875. 8-METHOXY-4-HYDROXYQUINOLINE-2-CARBOXYLIC ACID 								
Allen, M. J., et al., 1957	30 mice			1 part/4 parts cholesterol in 9–11 mg. pellet implant.	Urinary bladder	Tumors[4926, 4927].	14 at 40 wks.	At least 40 wks.
876. 2-METHYLAMINO-4-AMINO-6,7-DIPHENYLPTERIDINE 								
Paget, G. E., 1957	12 rats	Wistar albino	6 F & M	200 mg./1 kg. of aqueous susp. daily for 8 wks.	P.O	0	6 at end of experiment.	8 wks.
	12 rats	Wistar albino	6 F & M	50 mg./1 kg. of aqueous susp. daily for 8 wks.	P.O	0		8 wks.
	12 rats	Wistar albino	6 F & M	100 mg./1 kg. of aqueous susp. daily for 8 wks.	P.O	0	6 at end of experiment.	8 wks.

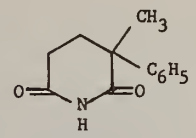
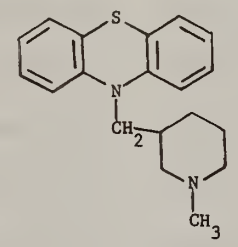
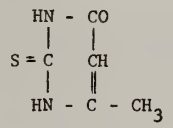
[4924] Weekly applications of 0.17% croton oil in acetone begun 23 days after first treatment.
[4925] Sodium salt of 5-[2′-(methylthioethyl)-5-(1-methylbutyl)]-2-thiobarbituric acid.
[4926] 1 papilloma or adenoma, 3 with urinary cystic carcinoma.
[4927] 1/24 cholesterol controls with urinary cystic carcinoma.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
877. 1-METHYL-4-AMINO-N¹-PHENYL-N¹-(2-THENYL)-PIPERIDINE TARTRATE[4928] 								
Rothlin, E., and Cerletti, A., 1955.	Rats	White		15 mg./kg. alone or with calcium, 2% NaCl in dict, up to 180 d.	P.O	0		Up to 180 d.
	Guinea pigs			69 mg./kg. for 30 d	S.C	0	50%	30 d.
878. 10-METHYL-5,6-BENZACRIDINE 								
Lacassagne, A., et al., 1955[4929]	10 mice	XVII	M & F	3 times 0.5 mg. in peanut oil at 1 mo. intervals.	S.C	0	8 at 90 d	537 d.
	10 mice	XVII	M & F	1 drop of 0.3% in acetone 2 times a wk.	Nape of neck	0	6 at 90 d	323 d.
Mashbits, F. D., 1955[4930]	30 mice[4931]	White		5–10 mg. in saline	S.C	Tumors[4932]		At least 18 mos.
879. 9-METHYL-3,4-BENZACRIDINE 								
Mashbits, F. D., 1955[4677]	25 mice[4931]	White		5–10 mg. in saline	S.C	Tumors[4933]		At least 5 mos.

[4677] From abstract.
[4928] Sandostene.
[4929] 10-methyl-5,6-benzacridine.
[4930] From abstract. 9-methyl-1,2-benzacridine.
[4931] Age: up to 3 months.
[4932] Pulmonary adenomas. 3 with leukemia (2 hemocytoblastocytic, 1 myeloid). No controls.
[4933] 7 with injection site sarcomas, 1 with pulmonary papilloadenoma. Some with non-injection site carcinomatous lesions; transplanted and developed into injection site type sarcomas. No controls.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
				880. 9-METHYL-3,4,5,6-DIBENZACRIDINE 				
Mashbits, F. D., 1955[4677]	15 mice[4931]	White		5–10 mg. in saline	S.C	Tumors[4934]		At least 12 mos.
				881. METHYLENE BLUE 				
Fajer, A., 1957	21 mice		10 M, 11 F	0.126% in low fat diet for 30 d	P.O	0[4935]	Sacrificed at 30 d	30 d.
				882. 10-METHYL-3-ETHYL-7,8-BENZACRIDINE 				
Lacassagne, A., et al., 1955	10 mice	XVII	M & F	1 drop of 0.3% in acetone 2 times a wk.	Nape of neck	Tumors[4936]	7 at 90 d	253 d.
	10 mice	XVII	M & F	3 times 0.5 mg. in peanut oil at 1 mo. intervals.	S.C	0	7 at 90 d	385 d.
				883. 3-METHYL-10-ISOPROPYL-5,6-BENZACRIDINE 				
Lacassagne, A., et al., 1955	10 mice	XVII	M & F	3 times 0.5 mg. in peanut oil at 1 mo. intervals.	S.C	0	9 at 90 d	445 d.

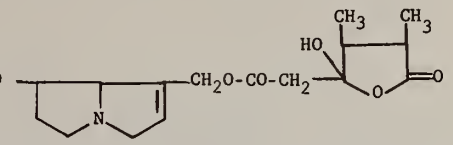
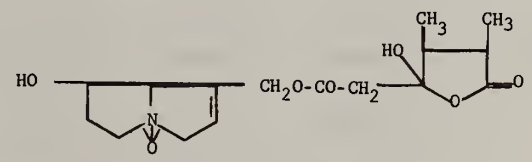
[4677] From abstract.
[4931] Age: up to 3 months.
[4934] 5 with injection site sarcomas, 1 with pulmonary adenoma and 3 pulmonary papilloadenomas. No controls.
[4935] Incomplete pathology report.
[4936] 4 epitheliomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
884. α-METHYL-α-PHENYLGLUTARIMIDE 								
Marshall, P. G., et al., 1955	10 rats	Tuck, weanling	M	Avg. of 150 mg./kg. daily mixed in diet.	P.O	0	All sacrificed	7 wks.
	2 rabbits adult.		F	30 mg./kg. body wt. in 5 ml. 5% acacia soln., 5 d./wk. for 5½ wks.	P.O. (stomach tube).	0		7 wks.
	10 rats	Tuck, weanling	M	Avg. of 50 mg./kg. body wt. mixed in diet. Total of approx. 7 g./kg. body wt.	P.O	0	All sacrificed	7 wks.
885. N-[METHYL-PIPERIDYL-3 METHYL] PHENOTHIAZINE 								
Konig, J., and Klippel, R., 1957.	9 dogs		M & F	From 5 to 20 mg./kg., 5 times wkly	P.O. & I.V	0		51 wks.
886. 4-METHYL-2-THIOURACIL 								
Rowinski, P., and Manuta, G., 1952.	3 guinea pigs.[4937]		F	0.05 g. daily in drinking water	P.O	0[4938]		Approx. 34 d.
Doniach, I., and Logothetopoulos, J. H., 1956.	50 rats[4939]	Hooded Lister	25 ♂♂	Saturated soln. in drinking water, freshly prepared wkly.[4940]	P.O	Tumors[4941, 4942].	16 M & 17 F at 16 mos.	16 mos.
Teir, H., et al., 1956	15 rats		F	0.1% in diet	P.O	0[4943]	3 killed at 2½, 6 & 8 mo. intervals.	12 mos.

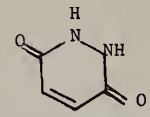
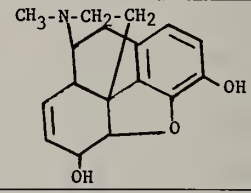
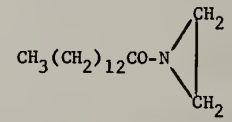
[4937] Approximately 4½ months pregnant.
[4938] 10 offspring (8 dead at birth) with thyroid and parathyroid hypertrophy.
[4939] Left thyroid lobe auto-implant with 2 subsequent re-implantations. (26 implants recovered.)
[4940] Treatment interrupted for 4 and 6 weeks during final 9 months.
[4941] 26 residual thyroid lobe adenomas. 1 adenoma with hyperplasia in first implant. 2 with thyroid hyperplasia in first implant.
[4942] 1/30 untreated implant controls with residual thyroid lobe adenoma.
[4943] Thyroid hyperplasia.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
886. 4-METHYL-2-THIOURACIL (Continued)								
	15 rats		F	0.1% in diet.[4944]	P.O	Tumors[4945]	3 killed 2½, 6 & 8 mos. intervals.	12 mos.
Doniach, I., 1957	14 rats	Black & White hooded Lister.	9 M & 5 F	As a saturated soln. in drinking water for 15 mos.	P.O	Tumors[4946]	5 killed at 6 mos	15 mos.
Kuusisto, A. N., and Telkkä, A., 1957.	10 guinea pigs.		M	150 mg./kg. as aqueous susp. for over 40 d.	P.O. (stomach tube).	0[4947]	All sacrificed	At least 40 d.
Kagami, T., 1958	30 mice[4948]	dd	M	0.5% in food	P.O	Tumors[4949, 4950]	19 sacrificed	At least 503 d.
	50 mice	dd	M	0.5% in food	P.O	Tumors[4951, 4952]	25 sacrificed	At least 638 d.
	50 mice[4770]	dd	M	0.5% in food	P.O	Tumors[4953, 4954]	25 sacrificed	At least 589 d.
Field, J. B., et al., 1959	34 rats	Long-Evans	F	2.5 mg./d.+0.3 mg. thyroxin/d., fed low-iodine diet for over 18 mos.	P.O	Tumors[4955, 4956]		Up to 33 mos.
	34 rats	Long-Evans	F	2.5 mg./d. in low-iodine diet for over 18 mos.	P.O	Tumors[4956, 4957]		Up to 33 mos.
Napalkov, N. P., 1959	Rats	Stock albino	M & F	0.01%[4958] in diluted milk, 10 mg. daily.	P.O	Tumors[4959]	Killed between 1 & 24 mos.	Up to 24 mos.
	19 rats	White	F	10–12 mg. daily in drinking water for 18–19 mos.	P.O	Tumors[4960, 4961]	Killed at various intervals.	24 mos.
	50 rats	White	24 M, 26 F	0.1% soln. in diluted milk, 10–12 mg. daily intake.	P.O	Tumors[4961, 4962]	Killed at various intervals.	800 d.
	80 rats	White	49 F, 31 M	0.1% soln. in drinking water, 5–6 mg. daily intake.	P.O	Tumors[4961, 4963]	Killed at various intervals.	800 d.
Israel, M. S., and Ellis, Rosemary I., 1960.	25 mice	C57	13 M, 12 F	0.05% soln. as drinking water up to 480 d., fed low iodine diet.	P.O	Tumors[4964]	1 died at 476 d. all sacrificed at 480 d.	480 d.
	50 mice	C57	25 M, 25 F	0.05% soln. as drinking water up to 480 d.	P.O	0[4965]	All sacrificed at 480 d.	480 d.

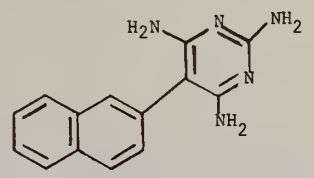
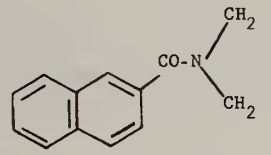
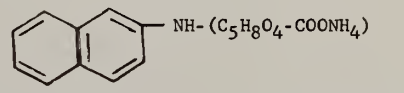
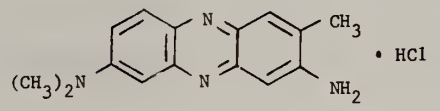
[4770] Castrated.
[4944] Semi-weekly I.P. injections of 0.5 ml. 0.1% thyroid gland suspension.
[4945] 1 anaplastic thyroid carcinoma.
[4946] 10 with multiple thyroid adenomas. Of 17 untreated controls, some with micro-adenomas.
[4947] Thyroid histochemical study.
[4948] Thyroidectomized.
[4949] 2 pituitary adenomas at 481–503 days.
[4950] 24 thyroidectomized untreated controls negative.
[4951] 1 pituitary adenoma at 638 days. Some malignant thyroid tumors.
[4952] 50 untreated controls negative.
[4953] 4 pituitary adenomas at 497–573 days.
[4954] 45 castrated untreated controls negative.
[4965] 1 (4%) with malignant invasive thyroid tumor. 12 with thyroid nodules.
[4966] Thyroid pathology only.
[4967] 8 (33%) with malignant invasive thyroid tumor. 15 with thyroid nodules.
[4958] 6-methylthiouracil.
[4959] Near 100% with thyroid adenoma at 17–18 months.
[4960] 14 with 28 thyroid adenomas, 3 infiltrative growths. (malignancy doubtful).
[4961] 1/32 untreated controls with thyroid adenoma at 850 days.
[4962] 13 males with 29 thyroid adenomas. 12 infiltrative growths (malignancy doubtful). 13 females with 29 thyroid adenomas, 22 infiltrative growths (malignancy doubtful).
[4963] 10 males with 21 thyroid adenomas, 9 infiltrative growths (malignancy doubtful). 17 females with 43 thyroid adenomas, 25 infiltrative growths (malignancy doubtful).
[4964] 8 females, 3 males with thyroid adenomas. 1 male with thyroid adenocarcinoma with pulmonary metastases at 476 days. 8 pituitary adenomas. 1 female with cecal carcinoma. 25 untreated controls negative.
[4965] Near 100% thyroid hyperplasia. 25 untreated controls were negative.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
				887. MONOCROTALINE[4966] 				
Schoental, R., and Head, M. A. 1955.	6 rats[4967]	Wistar	M	12 mg. once	I.P	Tumors[4968]	5 died from 2½–3 mos.	3 mos.
	9 rats	Wistar	5 F, 4 M	0.03 mg./ml. soln.[4969] 2 d./wk. for 5½ mos., then given 2 injs. of 4 mg./rat, 3 wks. later 8 mg./rat.	P.O. & I.P	0[4970]	Females died earlier, males alive at 1 yr.	Over 1 yr.
Schoental, R., and Head, M. A., 1955.	4 rats	Wistar	M	0.03 mg./ml. soln.[4969] 2 d./wk. for a yr.	P.O. & I.P	0[4971]		1 yr.
	6 rats	Wistar	F	0.03 mg./ml. soln.[4969] 2 d./wk. until death.	P.O	0[4972]	1 at 10½ mos	10½ mos.
	14 rats[4973]	Wistar	M & F	1% watery soln.[4969] graded dose of 0.5—4 mg./rat once.	I.P	0[4974]	4 wk. olds at 4–5 wks.	5 wks.
	13 rats	Wistar	M & F	Saturated soln. in ethyl alcohol[4969] applied 5 times/wk. for 5 wks.	Skin	0[4974]	2 at 3 mos	3 mos.
Schoental, R., and Magee, P. N., 1959.	16 rats	Wistar	M & F	75–125 mg./kg. once	P.O. (stomach tube).	0[4976]	16 at 11 d	Up to 60 d.
	4 rats	Wistar	M & F	30–40 mg./kg. once	P.O. (stomach tube).	0[4976]	4 at 11 d	Up to 60 d.
	7 rats	Wistar	M & F	25–29 mg./kg. once	P.O. (stomach tube).	0[4976]	5 at 18 mos	Up to 30 mos.
				888. MONOCROTALINE N-OXIDE 				
Schoental, R. and Magee, P. N., 1959.	14 rats	Wistar	M & F	51–99 mg./kg. once	P.O. (stomach tube).	0[4976]	1 at 2 mos	At least 18 mos.
	8 rats	Wistar	M & F	25–50 mg./kg. once	P.O. (stomach tube).	0[4976]	1 at 2 mos	At least 18 mos.
	24 rats	Wistar	M & F	100–110 mg./kg. once	P.O. (stomach tube).	0[4976]	13 at 11 d	Up to 60 d.

[4966] Pure crystalline.
[4967] Previous treatment with various amounts of monocrotaline for 5½–12 months.
[4968] 2 hepatic (1 endothelial tumor, 1 multiple hepatoma). 1 pulmonary papillary adenoma.
[4969] Stored at 0.4° C.
[4970] No details.
[4971] Pulmonary, hepatic and splenic lesions.
[4972] 3 with pulmonary hyperplasia; 1 with renal necrosis and hepatic vascular hyperemia.
[4973] 7 at age 2 weeks; 7 at age 4 weeks.
[4974] Hepatic and pulmonary lesions.
[4975] Subacute and chronic hepatic lesions.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
889. MALEIC HYDRAZIDE 								
Salaman and Roe, 1956	25 mice	Albino "S" strain.		10 thrice wkly. applications of 10% soln.[4976] in 50% aqueous carbowax 300 (total dose 0.3 g.)[4977].	Skin	2 (1 pap. each).	21 at about 28 wks.	Approx. 30 wks.
Allen, M. J., et al., 1957	20 mice			1 part/4 parts cholesterol in 9–11 mg. pellet implant.	Urinary bladder.	0[4978]	14 at 40 wks	At least 40 wks.
890. MORPHINE 								
Mellet, L. B., and Woods, L. A., 1955.[4979]	5 monkeys		F	30 mg./kg. once daily for 2 mos. then 15 mg./kg. twice daily at 12 hr. intervals.	S.C.	0[4980]		At least 2 mos.
891. MYRISTOYLETHYLENEIMINE 								
Walpole, A. L., et al., 1954	20 mice	Albino C3Hf	M	Total of 80 mg./20 g. dissolved in 2.0 ml./20 g. sterilized arachis oil twice wkly. for 222 dosing d.	S.C. r. flank	Tumors[4981, 4982].	5 died from 35–361st d.	395 d.
	20 mice	Albino W	F	3 mg./20 g. dissolved in 0.2 ml./20 g. sterilized arachis oil once.	S.C. r. flank	Tumors[4983, 4984].	19 died from 44–473 d.	473 d.
	20 mice	Albino W	F	Total of 33 mg./20 g. dissolved in total of 2.2 ml./20 g. sterilized arachis oil twice wkly. for 40 dosing d.	S.C. r. flank	Tumors[4983, 4985].	19 died from 44–262 d.	262 d.
	12 rats	Albino	6 āā	Total of 332.5 mg./100 g. in total of 6.65 ml./100 g. arachis oil[4644] twice wkly. for 141 dosing d.	S.C. r. flank	Tumors[4985, 4986].		229 d. or more.
	12 rats	Albino	6 āā	12.5 mg./100 g. in 0.2 ml./100 g. arachis oil[4644] once.	S.C. r. flank	0[4984, 4987]	1 died at 224 d	489 d. or more.

[4644] Sterilized (140° C for 1 hr.).
[4978] As the monosodium derivative.
[4977] 18 weekly applications of 0.17% croton oil in acetone begun 23 days after first treatment.
[4978] 1/24 cholesterol controls with urinary cystic carcinoma.
[4979] An abstract.
[4980] No details.
[4981] 13 with injection site sarcoma.
[4982] 24 arachis oil controls with 5 injection site tumors, 1 non-injection site tumor.
[4983] 1 with injection site sarcoma.
[4984] No comparable control.
[4985] 24 arachis oil controls with 3 non-injection site tumors.
[4986] 8 with injection site sarcoma, 1 with lymphosarcoma, 1 with mammary fibroadenoma.
[4987] 1 injection site mammary fibroadenoma at 450 days.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
892. 5-β-NAPHTHYL-2,4,6-TRIAMINOPYRIMIDINE 								
Haddow, A., et al., 1954	20 rats	Albino	10 M, 10 F	20 mg. dispersed in oil, thrice at 7 d. intervals.	I.P	Tumors[4988]		At least 18 mos.
893. β-NAPHTHOYLETHYLENEIMINE 								
Walpole, A. L., et al., 1954	6 rats	Albino	M	Total of 125 mg./100 g. in total of 5.0 ml./100 g. arachis oil[4644] twice wkly. for 141 dosing d.	S.C. r. flank	Tumors[4989, 4990]		358 d. or more.
	6 rats	Albino	F	Total of 97.5 mg./100 g. in total of 3.9 ml./100 g. arachis oil[4644] twice wkly. for 141 dosing d.	S.C. r. flank	Tumors[4990, 4991]		319 d. or more.
894. 2-NAPHTHYLAMINE-N-GLUCOSIDURONIC ACID, AMMONIUM SALT 								
Allen, M. J., et al., 1957	20 mice			1 part/4 parts cholesterol in 9–11 pellet implant.	Urinary bladder	0[4992, 4993]	5 at 52 wks	52 wks.
895. NEUTRAL RED 								
Oka, K., et al., 1957	Rats			0.5 cc. of 1% soln. once/wk	Inj	0		Prolonged period.
Ooneda, G., et al., 1957	Rats		M & F	1% aqueous soln. once/wk	S.C	0		365 d.

[4844] Sterilized (140° C for 1 hr.).

[4988] 1 male with renal adenocarcinoma and spermatic cord-epididymal rhabdomyosarcoma with visceral metastases. 1 female with injection site rhabdomyosarcoma with diaphragmatic and hepatic metastases.

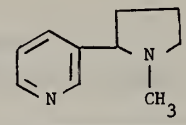
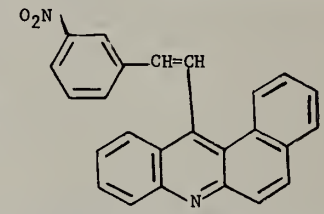
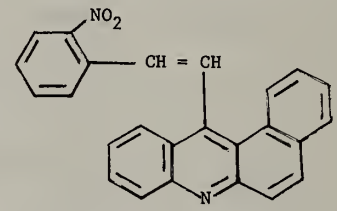
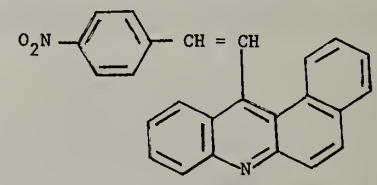
[4989] 6 with injection site sarcoma, 2 with otic sebaceous gland carcinomata.

[4990] 12 arachis oil controls with 5 injection site sarcomas, 3 other site tumors.

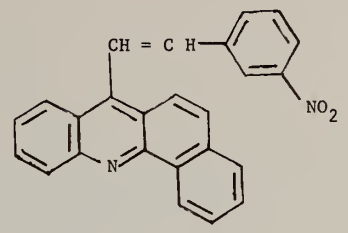
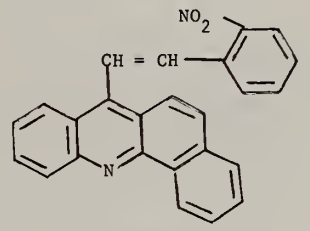
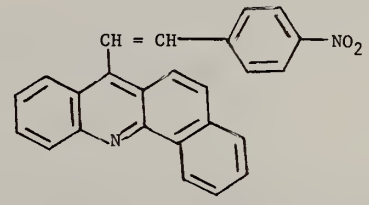
[4991] 6 with injection site sarcoma, 2 with injection site mammary carcinomata, 1 with mammary carcinoma, 1 with thoracic sarcoma.

[4992] 1 urinary cystic papilloma or adenoma.

[4993] 1/24 cholesterol controls with urinary cystic carcinoma.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
896. NICOTINE 								
Eranko, Olavi, 1955	16 rats	Wistar	M	2.5 mg.[4994] for 10 doses, 4 mg. every work d. for 4 mos., then 2 mg. every work d. till 6½ mos.	S.C	0[4995]	10 died during experiment.	6½ mos.
897. m-NITROBENZYLIDENE-1,2-BENZ-9-METHYLACRIDINE 								
Mashbits, F. D., 1955[4996]	25 mice[4931]	White		5–10 mg. in saline	S.C	Tumors[4997]		
898. o-NITROBENZYLIDENE-1,2-BENZ-9-METHYLACRIDINE 								
Mashbits, F. D., 1955[4996]	26 mice[4931]	White		5–10 mg. in saline	S.C	Tumors[4998]		
899. p-NITROBENZYLIDENE-1,2-BENZ-9-METHYLACRIDINE 								
Mashbits, F. D., 1955[4996]	25 mice[4931]	White		5–10 mg. in saline	S.C	Tumors[4999]		

[4931] Age: up to 3 months.
[4994] As the bitartrate.
[4995] 100% with hyperplastic medullary nodules.
[4997] 2 adenomas; 1 malignant hepatoma with pulmonary metastases. No controls.
[4998] 2 with pulmonary papilloadenomas. No controls.
[4999] 3 pulmonary adenomas. No controls.

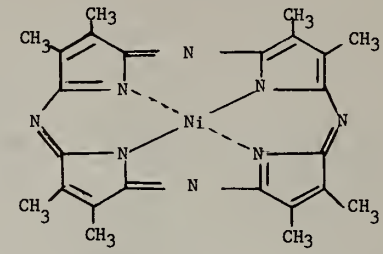
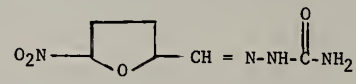
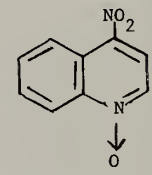
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
900. m-NITROBENZYLIDENE-3,4-BENZ-9-METHYLACRIDINE 								
Mashbits, F. D., 1955[4996]	25 mice[4931]	White		5–10 mg. in saline	S.C	Tumors[5000]		
901. o-NITROBENZYLIDENE-3,4-BENZ-9-METHYLACRIDINE 								
Mashbits, F. D., 1955[4996]	Mice[4931]	White		5–10 mg. in saline	S.C	Tumors[5001]		
902. p-NITROBENZYLIDENE-3,4-BENZ-9-METHYLACRIDINE 								
Mashbits, F. D., 1955[4996]	30 mice[4931]	White		5–10 mg. in saline	S.C	Tumors[5002]		

[4931] Age: up to 3 months.

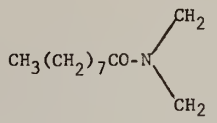
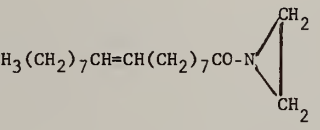
[5000] 3 with benign and malignant pulmonary adenomas. 1 pulmonary carcinoma. 1 cervical bronchiogenic carcinoma. No controls.

[5001] 1 pulmonary adenoma. No controls.

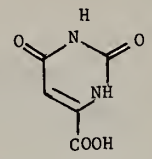
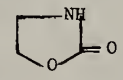
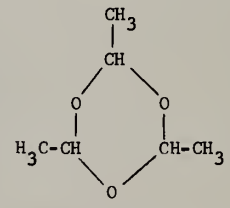
[5002] 4 with pulmonary adenomas and leukemic foci. No controls.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
903. NICKEL OCTAMETHYLTETRAZAPORPHYRIN 								
Haddow, A., and Horning, E. S., 1960.	20 mice	Stock		0.5 mg. wkly. for 8 wks	S.C	0	12 at 8 mos	8 mos. to date.
904. NITROFURAZONE 								
Newberne, P. M., and McEuen, G. L., 1957.	100 chicks[5003]	Lancaster	M	0.0125, 0.025, 0.050 and 0.100% in diet.	P.O	0	1 killed wkly. (per group).	8 wks.
905. 4-NITROQUINOLIN N-OXIDE 								
Nakahara, W., and Fukuoka, F., 1959.	Mice	Mixed		1.0 mg. in propylene glycol given in 5 injs. at 10 d. intervals.	S.C	Tumors[5004]	3 at 273 d	315 d.
	Mice	Mixed		2.0 mg. in propylene glycol given in 6 injs. at 10 d. intervals.	S.C	Tumors[5005]	1 at 232 and 262 d.	262 d.
	Mice	Mixed		0.5 mg. in propylene glycol given in 5 injs. at 10 d. intervals.	S.C	Tumors[5006]	9 at 221 d	354 d.
	Mice	Mixed		1.5 mg. in propylene glycol given in 6 injs. at 10 d. intervals.	S.C	Tumors[5007]	3 at 240 d	334 d.
	20 mice	Mixed		Total 1.2 mg. in normal human serum which stood at room temp. for 30 mins. was given in 0.1 cc. doses 6 times in 50 d.	S.C	0	10 at 200 d	272 d.

[5003] 25/group.
[5004] 2 with injection site sarcomas at 169 and 180 days.
[5005] 4 with injection site sarcomas at 130–190 days.
[5006] 3 with injection site sarcomas at 120–180 days.
[5007] 3 with injection site sarcomas at 130–210 days.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
906. NONANOYLETHYLENEIMINE 								
Walpole, A. L., et al., 1954	6 rats	Albino	F	Total of 72 mg./100 g. dissolved in total of 3.6 ml./100 g. carbowax 300 twice wkly. for 137 dosing d.	S.C. r. flank	Tumors[5008, 5009]		263 d. or more.
	6 rats	Albino	M	Total of 74 mg./100 g. dissolved in total of 3.7 ml./100 g. carbowax 300 twice wkly. for 137 dosing d.	S.C. r. flank	Tumors[5009, 5010]		324 d. or more.
	10 mice	Albino C3Hf	F	0.8 mg./20 g. dissolved in 0.1 ml./20 g. sterilized arachis oil once.	S.C. r. flank	0	All died by 569 d	569 d.
	20 mice	Albino C3Hf	M	Total of 10 mg./20 g. dissolved in 3.8 ml./20 g. sterilized arachis oil twice wkly. for 137 dosing d.	S.C. r. flank	Tumors[5011, 5012]	13 died from 36–506 d.	504 d.
	12 rats	Albino	6 āā	2 mg./100 g. in 0.1 ml./100 g. arachis oil[4644] once.	S.C. r. flank	0[5013]	1 died at 431 d	489 d. or more.
	6 rats	Albino	F	Total of 86 mg./100 g. in total of 8.6 ml./100 g. arachis oil[4644] twice wkly. for 191 dosing d.	S.C. r. flank	Tumors[5012, 5014]		296 d. or more.
	6 rats	Albino	M	Total of 76 mg./100 g. in total of 7.6 ml./100 g. arachis oil[4644] twice wkly. for 191 dosing d.	S.C. r. flank	Tumors[5012, 5015]		238 d. or more.
907. OLEOYLETHYLENEIMINE 								
Walpole, A. L., et al., 1954	12 rats	Albino	6 āā	Total of 170 mg./100 g. in total of 1.7 ml./100 g. arachis oil[4644] twice wkly. for 49 dosing d.	S.C. r. flank	Tumors[5016, 5017]	1 died at 136 d	178 d. or more.

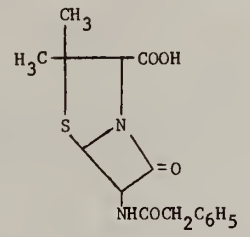
[4044] Sterilized (140° C for 1 hr.).
[5008] 5 with injection site sarcomas; 2 with injection site mammary carcinomata.
[5009] 2/12 controls with non-injection site tumors.
[5010] 4 with injection site sarcomas, 1 with reticulosis, 1 with rectal adenoma, 1 with injection site mammary carcinoma.
[5011] 4 with injection site sarcomas.
[5012] 12 arachis oil controls with 3 injection site sarcomas, 3 other-site tumors.
[5013] No comparable control.
[5014] 6 with injection site sarcomas, 1 with lymphoid lukemia, 1 with mammary carcinoma.
[5015] 5 injection site sarcomas, 1 enteric adenocarcinoma.
[5016] 11 with injection site sarcomas.
[5017] 24 arachis oil controls with 3 non-injection site tumors.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
908. OROTIC ACID 								
Schweitzer, C., 1956	22 rats		F	10 mg. daily mixed with food	P.O	(5018)		50 d.
	20 rats		M & F	From 25 to 150 mg. daily mixed with food—total 12 g.	P.O	(5019)		120 d.
909. OXAZOLIDONE 								
Berenblum, I., et al., 1959	30 mice	Swiss	M & F	10 mg. in saline once, 4 d. subsequent treated with twice-wkly. skin applications of 5% soln. croton oil in liquid paraffin for 40 wks.	I.P	Tumors[5020, 5021].	All sacrificed at 40 wks.	40 wks.
	17 mice	Swiss	M & F	25 mg. as aqueous soln. once, 4 d. subsequent treated with twice-wkly. skin applications of 5% soln. croton oil in liquid paraffin for 40 wks.	P.O	Tumors[5021, 5022].	All sacrificed at 40 wks.	40 wks.
910. PARALDEHYDE 								
Roe & Salaman, 1955	20 mice	Stock albino "S" strain.	M	2 wkly. applications of 0.3 ml. of 50% soln. in acetone (total dose: 300.0 mg.[5023]).	Skin	1 (skin tumor).	18 alive at 22 wks.	At least 23 wks.

[5018] Weight study.
[5019] Fertility and hepatic morphology study.
[5020] 10/29 with dermal papillomas (0.35 ± 0.1 tumor/mouse).
[5021] 46 croton oil controls with 11 dermal papillomas and 2 pulmonary adenomas. Relationship doubtful.
[5022] 8/14 with dermal papillomas (0.9 + 0.3 tumor/mouse).
[5023] 18 weekly applications of 0.3 ml. 0.5% croton oil in acetone, begun 4 weeks after first treatment.

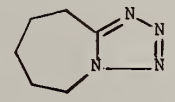
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
911. PENICILLIN[5024]								
Bridges, J. H., et al., 1954	7 pigs	Duroc	M	2 g./ton for 119 d. in milo-soybean oil meal ration.	P.O	0[5025]		119 d.
Reutner, T. F., et al., 1955	2 dogs			250 mg./kg. capsule daily, 5 d./wk	P.O	0	Killed at 5 wks	5 wks.

912. PENICILLIN G



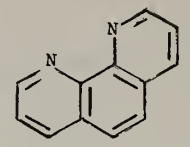
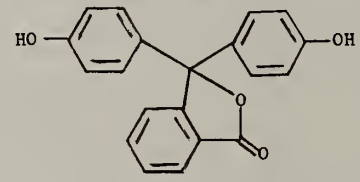
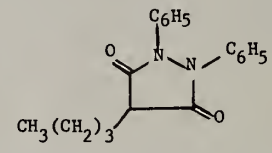
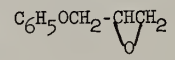
Libby and Meites, 1954	Chicks[5026]	White Leghorn	M	2 g./ton of feed	P.O	0[5027]	Sacrificed at 5 wks	5 wks.
Seifter, J., et al., 1954	5 dogs			1,000,000 units[5028] 5 times/wk. for total of 61 doses.	I.M	0		12 wks.
DeSomer, P., et al., 1955	Guinea pigs			Gradually increasing doses up to 100,000 u.[5029]	I.P. or P.O	0		Over 4 wks.
Hewes, C. G., and Shay, D. E., 1955.	Guinea pigs.[5030]		M & F	0.4 mg.[5031] daily plus regular diet for 9 wks.	P.O	0		9 wks.

913. PENTYLENETETRAZOL

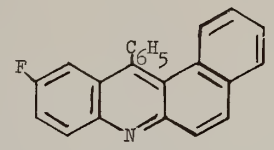
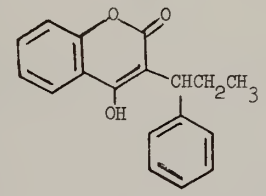
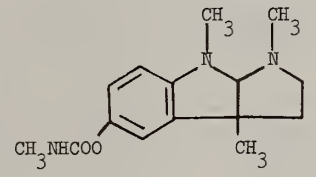
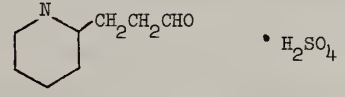


Kell, J. F., et al., 1956	3 cats			40–150 mg. once daily	I.V	0[5032]	10–62 d	62 d.
	2 cats			40–150 mg. twice daily	I.V	0[5032]	10–62 d	62 d.

[5024] Type not specified.
[5025] Renal, hepatic and splenic examination negative.
[5026] Age 20 days.
[5027] Thyroid study.
[5028] Potassium penicillin G.
[5029] Crystalline potassium penicillin G.
[5030] Weanling.
[5031] As crystalline sodium penicillin G.
[5032] Pulmonary artery hypertrophy.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
914. o-PHENANTHROLINE 								
Roe and Salaman, 1955	20 mice	Stock albino "S" strain.	M	0.3 ml. of 10% soln. in acetone, wkly. for 10 wks. (total dose: 300.0 mg.)[5033]	Skin	0	All alive at 18 wks.	At least 19 wks.
915. PHENOLPHTHALEIN 								
Schmidt, L., 1955	6 rats			320 mg./kg. daily in food	P.O	0	100%	3 mos.
Visek, W. J., et al., 1956[4979]	Mice			4.8, 24, 48 mg./kg./d. for 5 mos	P.O	0[5034]		5 mos.
916. PHENOLPHTHALEIN PHOSPHATE[5035]								
Haddow, A., and Horning, E. S., 1960.	20 mice	Stock		0.2 cc. wkly. for 13 wks	S.C	0	10 at 11 mos	11 mos.
917. PHENYLBUTAZONE 								
Kirsner, J. B., and Ford, H., 1955.	11 dogs[5036]			3.6—35.2 g. in 10–103 d	I.M	0[5037]		103 d.
918. PHENYL GLYCIDYL ETHER 								
Hine, C. H., et al., 1956	10 rats	Long-Evans	M	100 ppm. of vapor 7 hrs./d. 5 d./wk. for 50 exposures.	Inhalation	0		About 10 wks.

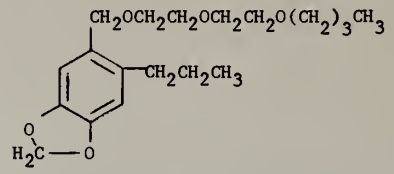
[4979] An abstract.
[5033] 18 weekly applications of 0.3 ml. 0.5% croton oil in acetone alternated (3 to 4 day intervals) with treatment.
[5034] No pathology.
[5035] Unspecified as to "Mono" or "Di"-ester.
[5036] 3 adrenalectomized.
[5037] 7 intact and 2 adrenalectomized with gastro-duodenal erosion and ulceration.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
919. 10-PHENYL-3-FLUORO-5,6-BENZACRIDINE 								
Lacassagne, A., et al., 1955	20 mice	XVII	M & F	3 times 0.5 mg. in peanut oil at 1 mo. intervals.	S.C	0	15 at 90 d	399 d.
920. 3-(1′-PHENYLPROPYL)-4-HYDROXYCOUMARIN 								
Salvi, F., 1954	4 dogs			50–100 μg./Kg. body wt., daily for 2 mos.	S.C	[5038]	Sacrificed at end of treatment.	2 mos.
921. PHYSOSTIGMINE 								
Roe and Salaman, 1959	20 mice	Stock albino "S" strain.	M	0.3 ml. of 0.05% soln. in acetone, wkly. for 15 wks. (Total dose: dose: 2.25 mg.)[5039]	Skin	0	17 alive at 18 wks	At least 19 wks.
922. β-(2-PIPERIDYL)-PROPIONALDEHYDE SULFATE 								
Squillaci, G.	4 rabbits		M	0.01 gr./kg. body wt. in water, daily for 40 d.	P.O	[5040]	Sacrificed at 40 d	40 d.

[5038] Hemorrhagic lesion and coagulation study.

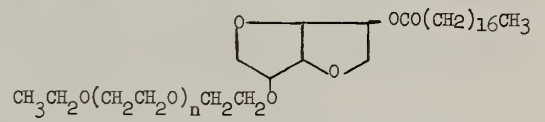
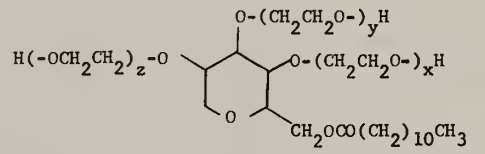
[5039] 18 weekly applications of 0.3 ml. 0.5% croton oil in acetone alternated (3 day intervals) with treatment.

[5040] Toxicity study.

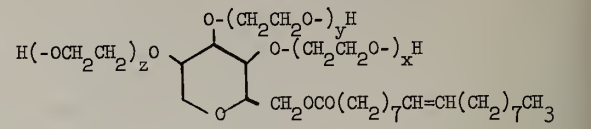
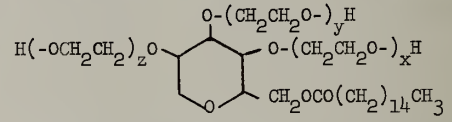
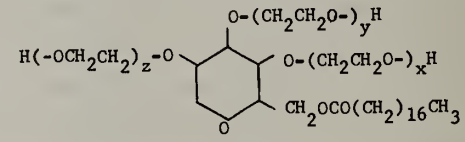
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
				923. PIPERONYL ETHER BUTOXIDE 				
Sarles, M., et al., 1949	3 rabbits	Albino		0.25 ml./kg. body wt. of 4.0% and 0.5% pyrethins emulsified in dist. water by use of 3.6% Tween 80, 9 times in 3 wks. on shoulder area, 2 wks. later 0.25 ml./kg. body wt. on rump area.	Skin	0		At least 5 wks.
	3 rabbits	Albino		0.25 ml./kg. body wt. of 0.2% and 0.025% pyrethins in deodorized petroleum oil 9 times in 3 wks. on shoulder area, 2 wks. later 0.25 ml./kg. body wt. on rump area.	Skin	0		At least 5 wks.
	3 rabbits	Albino		0.25 ml./kg. body wt. of 4% and 0.5% pyrethins in deodorized petroleum oil 9 times in 3 wks. on shoulder area, 2 wks. later 0.25 ml./kg. body wt. on rump area.	Skin	0		At least 5 wks.
	3 rabbits	Albino		0.25 ml./kg. body wt. of 4% in deodorized petroleum oil 9 times in 3 wks. on shoulder area, 2 wks. later 0.25 ml./kg. body wt. on rump area.	Skin	0		At least 5 wks.
	3 rabbits	Albino		0.25 ml./kg. body wt. 9 times in 3 wks. on shoulder area, 2 wks. later 0.25 ml./kg. body wt. on rump area.	Skin	0		At least 5 wks.
	4 rats			5% emulsion in dist. water with 5% Span 20 and Tween 20—6 d./wk. for 6 wks.	P.O	0	100%	9 wks.
Sarles, M. P. and Vandegrift, W. B., 1952.	24 rats	Wistar albino	12 āā	1.0% mixed in food for 2 yrs	P.O	0[5041]	20 at 52 wks	2 yrs.
	24 rats	Wistar albino	12 āā	2.5% mixed in food for 2 yrs	P.O	Tumors[5042]	4 at 52 wks	2 yrs.
Sarles, M. P., and Vandegrift, W. B., 1952.	12 rats	Wistar Albino	6 āā	2.5 ml./kg.–5 ml./kg. 6 d./wk. for 31 d.	P.O. (stomach tube).	0	2 died early	31 d.
	4 dogs	Mongrel	2 āā	0.002–0.003 ml./kg./d. in gelatin capsule for 1 yr.	P.O	0	100%	1 yr.
	4 dogs	Mongrel	2 āā	0.02–0.03 ml./kg./d. in gelatin capsule for 1 yr.	P.O	0	1 died early	1 yr.

[5041] 1 sarcoma, 1 hepatoma. Untreated controls with 1 sarcoma, 1 hepatoma.

[5042] 1 hepatoma, 1 hepatic cell carcinoma, 9 cholangeal cystitis, 1 sarcoma. Controls with 1 sarcoma, 1 hepatoma.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
923. PIPERONYL ETHER BUTOXIDE (Continued)								
	4 dogs	Mongrel	2 āā	0.14–0.16 ml./kg./d. in gelatin capsule for 1 yr.	P.O.	0	100%	1 yr.
	4 dogs	Mongrel	3 M, 1 F	0.2–0.7 ml./kg./d. in gelatin capsule for 15 wks.	P.O.	0	1 at 10 wks	15 wks.
	1 goat[5043]		F	2.0 ml. in gelatin capsule 6 d./wk. for 1 yr.	P.O.	0	100%	1 yr.
	24 rats	Wistar albino	12 āā	0.01% mixed in food for 2 yrs	P.O.	0[5044]	21 at 52 wks	2 yrs.
	24 rats	Wistar albino	12 āā	0.1% mixed in food for 2 yrs	P.O.	0[5045]	21 at 52 wks	2 yrs.
924. POLYOXYETHYLENE-1,4,3,6-DIANHYDROSORBITOL MONOSTEARATE 								
Setala, K., et al., 1959	Mice	White	M	0.18 mole dispersion in 100% carbowax 400 6 times wkly. for duration of experiment.	Skin	0[5045,5047]		Up to 30 d.
925. POLYOXYETHYLENE SORBITAN MONOLAURATE[5048] 								
Poling, C. E., et al., 1956	10 hamsters	Holtzman	M	10% in bread dict for 39 wks	P.O.	0	8 died	39 wks.
	10 rats	Holtzman	M	25% in synthetic diet for 21 wks	P.O.	0	1 died at 19th wk	21 wks.
	10 hamsters	Holtzman	M	5% in bread diet for 39 wks	P.O.	0	1 died	39 wks.
	10 hamsters	Holtzman	M	15% in bread diet for 39 wks	P.O.	0	9 died	39 wks.
Setala, H., 1956	50 mice	White	M	100% soln. once daily, 6 d./wk. for 52 wks.	Skin	Tumors[5049]	30 at 36 wks	52 wks.
Setala, K., et al., 1957	50 mice	Albino	M	100% 6 times a wk	Skin	0		24 wks.
Setala, K., et al., 1959	Mice	White	M	0.18 mole. conc. applied 12 times wkly. (twice daily) for duration of experiment.	Skin	0	100%	Up to 30 d.
	Mice	White	M	0.18 mole. conc. applied 6 times wkly. for duration of experiment.	Skin	0	100%	Up to 30 d.

[5043] Nursed female goat for 6 mos; remained normal.
[5044] 1 sarcoma. Controls with 1 sarcoma.
[5045] 1 sarcoma. Untreated controls with 1 sarcoma.
[5046] Intrafollicular epidermal hyperplasia.
[5047] Carbowax 400 controls negative.
[5048] Tween 20.
[5049] 1 benign dermal tumor at 36 wks.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
926. POLYOXYETHYLENE SORBITAN MONOOLEATE[5050] 								
Setala, H., 1956	50 mice	White	M	100% soln. once daily, 6 d./wk. for 52 wks.	Skin	Tumors[5051]	34 at 43 wks	52 wks.
	50 mice	White	M	100% soln. once daily, 6 d./wk. for 52 wks.[5052]	Skin	0	18 at 52 wks	52 wks.
Setala, K., et al., 1957	50 mice	Albino	M	100% 6 times a wk	Skin	0		24 wks.
	50 mice	Albino	M	100%[5052] 6 times a wk	Skin	0		24 wks.
Wong, T., et al., 1959	28 mice	C57BL	M	100 mg. daily in basal diet for 10 wks., then fed untreated basal diet 8 wks., purina chow ad. lib. for remainder of experiment.	P.O	0[5053,5054]	25 at 30 wks., 20 at 50 wks.	51 wks.
927. POLYOXYETHYLENE SORBITAN MONOPALMITATE[5055] 								
Setala, H., 1956	50 mice	White	M	100% soln. once daily, 6 d./wk. for 52 wks.	Skin	Tumors[5055]	43 at 24 wks	52 wks.
Setela, K., et al., 1957	50 mice	Albino	M	100% 6 times a wk	Skin	Tumors[5057]	43/50	24 wks.
928. POLYOXYETHYLENE SORBITAN MONOSTEARATE 								
Setala, H., 1956	50 mice	White	M	100% soln.[5058] once daily, 6 d./wk. for 52 wks.	Skin	Tumors[5059]	45 at 16 wks	52 wks.
Brush, M. K., et al., 1957	1 beagle		F	10%[5060] in (agar gel basal) diet for life	P.O	0	Still alive at end of exper.	1 yr. or more.
	36 hamsters			5% in ("Fox Chow" basal) diet	P.O	0	3 dead at 1 yr	Up to 13 mos.

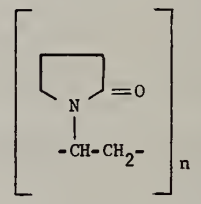
[5050] Tween 80.
[5051] 1 benign dermal tumor at 43 wks.
[5052] Tween 81.
[5053] 1 leukemia at 29 weeks; 1 malignant thymoma at 45 weeks; probable hepatoma.
[5054] 1/23 untreated controls with leukemia.
[5055] Tween 40.
[5056] 2 with benign dermal tumors, first at 24 weeks.
[5057] 2% = 1/1.
[5058] Tween 60.
[5059] 5 with 6 benign dermal tumors, first at 16 weeks.
[5060] Polyoxyethylene (20) sorbitan monostearate.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
928. POLYOXYETHYLENE SORBITAN MONOSTEARATE (Continued)								
	36 hamsters			1% in ("Fox Chow" basal) diet	P.O	0	100% at 1 yr	Up to 13 mos.
	24 mice[5061]		M & F	2.5, 5 or 10% in (synthetic) diet for 3–4 mos.	P.O	0		4 mos.
	3 beagles		M	5% or 10% in (agar gel basal) diet for life.	P.O	0	Still alive at end of exper.	1 yr. or more.
Lusky, L. M., and Nelson, A. A., 1957.	30 rats	20 Osborne-Mendel, 10 Bethesda Black.	20 M, 10 F	1 cc. of 6% aqueous soln.[5058] wkly	S.C	Tumors[5052]		73 wks.
Prodi, G., and Maltoni, C., 1957.	3 rabbits	Albino		2.5% olive oil soln.[5058] once daily	Skin, l. flank	0[5063]		Up to 116 d.
Setala, K., et al., 1957	50 mice	Albino	M	100%[5058] 6 times/wk	Skin	Tumors[5064]	45/50	24 wks.
van Esch, G. J., et al., 1958	30 mice	Swiss	15 M & F	Undiluted soln.[5058] in olive oil 6 times/wk. for 161 doses.	Skin	1[5065,5055]	27 at 6 mos	16 mos.
Shubik, P., et al., 1959	60 rats	Swiss	30 F & M	60 mg. undiluted 6 times/wk	Skin	Tumors[5067]	28 F, 14 M at 40 wks.	40 wks
	60 mice	Swiss	30 F & M	60 mg. undiluted 6 times/wk	Skin	Tumors[5068]	22 F, 7 M at 40 wks.	55 wks.
Setala, K., et al., 1959	Mice	White	F	0.18 mole. dispersion in 100% Carbowax 400, 6 times wkly. for duration of experiment.	Skin	0[5059,5070]		Up to 30 d.
	Mice	White	M	0.18 mole. conc. applied 6 times wkly. for duration of experiment.	Skin	0	100%	Up to 30 d.
	Mice	White	M	0.18 mole. conc. applied 12 times wkly. (twice daily) for duration of experiment.	Skin	0	100%	Up to 30 d.
	Mice	White	M	0.18 mole. conc. applied 12 times wkly. (twice daily) for duration of experiment.	Skin	0	100%	Up to 30 d.
	Mice	White	M	0.18 mole. conc. applied 6 times wkly. for duration of experiment.	Skin	0	100%	Up to 30 d.
Della Porta, G., et al., 1960	48 mice[5071]	Swiss albino	25 F, 23 M	60 mg. daily (5–6 times wkly.) for 70 wks.	Skin	Tumors[5072]	23 F and 18 M at 35 wks. of age and 10 F and 4 M at 60 wks.	70 wks.

[5058] Tween 60.
[5061] 6, 9 and 9 per group.
[5062] 5 with injection site fibrosarcomas. 3 intraabdominal lymphosarcomas (probably spontaneous).
[5063] Dermal hyperplasia.
[5064] 4% = 2/2.
[5065] Multiple papillomas at 6 months.
[5065] 30 Tween 60 controls with 1 papilloma.
[5067] 5 females with 17 epithelial tumors (avg. latency 41.5 wks.). 5 males with 6 epithelial tumors (avg. latency 35.5 wks.).
[5058] 9 females with 35 epithelial tumors, 1 carcinoma (avg. latency 44.4 wks.). 3 males with 32 epithelial tumors, 1 carcinoma (avg. latency 45.3 wks.).
[5069] Intrafollicular epidermal hyperplasia.
[5070] Carbowax 400 controls negative.
[5071] Begun at age 35 wks.
[5072] 10 females with 18 benign dermal tumors (13 regressed) (avg. latent period 18.44 wks.). 4 males with 12 benign dermal tumors (7 regressed) (avg. latent period 15.33 wks.).

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
928. POLYOXYETHYLENE SORBITAN MONOSTEARATE (Continued)								
	54 mice[5073]	Swiss albino	25 F, 29 M	60 mg. daily (5–6 times wkly.) for 70 wks.	Skin	Tumors[5074]	25 āā at 25 wks. of age and 9 F at 60 wks.	70 wks.
	60 mice	Swiss albino	30 āā	60 mg. 5–6 times wkly. for 60–82 wks.	Skin	Tumors[5075]	50 died by 60th wk.	At least 60 wks.
	60 mice	Swiss albino	30 āā	60 μg. twice wkly. for 75–80 wks	Skin	Tumors[5076]	40 died by 60th wk.	80 wks.
	30 mice	Swiss albino	F	1 drop (30 mg.) twice wkly. for 50 wks.	Skin	0[5077]	22 at 50 wks	50 wks.
	30 mice	Swiss albino	F	1 drop (30 mg.) 5–6 times wkly. for 50 wks.	Skin	0[5078]	15 at 50 wks	50 wks.

930. POLYVINYL PYRROLIDONE



Upham, et al., 1956	7 rabbits	Dutch	F	75 ml. of a 3.5% PVP in isotonic saline—once.	I.V	0	100%	60 d.
Hueper, W. C., 1957	50 mice	C57 Black	25 M, 25 F	Approx. 200 mg. (powdered form).[5081]	I.P., abdominal cavity.	0	29 alive at 13 mos	21 mos.
	50 mice	C57 Black	25 M, 25 F	Approx. 200 mg.(powdered form)[5082]	I.P., abdominal cavity.	Tumors[5083]	34 alive at 13 mos	21 mos.
	50 mice	C57 black	25 M, 25 F	Approx. 200 mg. (powdered form)[5084]	I.P., abdominal cavity.	Tumors[5085]	26 alive at 13 mos	21 mos.
	15 rats	Bethesda black	F	2.5 cc. of 7% soln., wkly. for 8 wks.[5082]	I.V	Tumors[5086]	8 alive at 13 mos	24 mos.
	15 rats	Bethesda black	F	2.5 cc. of a 7% soln., wkly. for 8 wks.[5084]	I.V	Tumors[5087]	11 alive at 13 mos	24 mos.
	30 rats	Bethesda black	F	Approx. 500 mg. (powdered form)[5081]	I.P., abdominal cavity.	Tumors[5088]	24 alive at 13 mos	24 mos.

[5073] Begun at age 25 wks.

[5074] 9 females with 11 benign dermal tumors (8 regressed) (avg. latent period 27.09 wks.). 3 males with 6 benign dermal tumors (3 regressed) (avg. latent period 20.50 wks.).

[5075] 16 females with 150 benign dermal tumors, 4 squamous cell carcinomas, 1 basal cell carcinoma. 6 males with 52 benign dermal tumors, 1 squamous cell carcinoma.

[5076] 9 females with 47 benign dermal tumors, 1 squamous cell carcinoma, 1 dermal fibrosarcoma. 10 males with 44 benign dermal tumors.

[5077] 2 with 2 benign dermal tumors (1 sebaceous adenoma, 1 perineal squamous cell carcinoma).

[5078] 1 benign dermal tumor, 1 perineal squamous cell carcinoma.

[5081] Avg. molecular wt.: 300,000.

[5082] Avg. molecular wt.: 50,000.

[5083] 6% with 2 lymphosarcomas, 1 reticulum cell sarcoma. Relationship probable.

[5084] Avg. molecular wt.: 22,000.

[5085] 1 lymphosarcoma.

[5086] 5 reticulum cell sarcomas, leukosarcomas, or mesotheliomas. 1 hepatic Kupffer cell sarcoma. 1 ovarian adenocarcinoma. 1 benign tumor.

[5087] 1 uterine adenocarcinoma or squamous cell carcinoma, 1 benign tumor.

[5088] 7 reticulum cell sarcomas, leukosarcomas, or mesotheliomas. 5 hepatic Kupffer cell sarcomas. 2 benign tumors.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
930. POLYVINYL PYRROLIDONE (Continued)								
	15 rats	Bethesda black	F	2.5 cc. of a 7% soln., wkly. for 8 wks.[5089]	I.V	Tumors[5090]	11 alive at 13 mos	24 mos.
	30 rats	Bethesda black	F	Approx. 500 mg. (powdered form)[5082]	I.P., abdominal cavity.	Tumors[5091]	22 alive at 13 mos	24 mos.
	30 rats	Bethesda black	F	Approx. 500 mg. (powdered form)[5084]	I.P. abdominal cavity.	Tumors[5092]	20 alive at 13 mos	24 mos.
	30 rats	Bethesda black	F	Approx. 500 mg. (powdered form)[5089]	I.P., abdominal cavity.	Tumors[5093]	24 alive at 13 mos	24 mos.
	30 rats	Bethesda black	F	Approx. 500 mg. (powdered form)[5081]	S.C., nape of neck.	Tumors[5094]	27 alive at 13 mos	24 mos.
	30 rats	Bethesda black	F	Approx. 500 mg. (powdered form)[5082]	S.C., nape of neck.	Tumors[5095]	24 alive at 13 mos	24 mos.
	30 rats	Bethesda black	F	Approx. 500 mg. (powdered form)[5084]	S.C., nape of neck.	Tumors[5096]	26 alive at 13 mos	24 mos.
	50 mice	C57BL	25 M, 25 F	Approx. 200 mg. (powdered form)[5089]	I.P., abdominal cavity.	0	19 alive at 13 mos	21 mos.
	50 mice	C57BL	25 F, 25 M	Approx. 200 mg. (powdered form)[5081]	S.C., nape of neck.	Tumors[5097]	25 alive at 13 mos	24 mos.
	50 mice	C57BL	25 M, 25 F	Approx. 200 mg. (powdered form)[5082]	S.C., nape of neck.	0	25 alive at 13 mos	21 mos.
	50 mice	C57BL	25 M, 25 F	Approx. 200 mg. (powdered form)[5084]	S.C., nape of neck.	Tumors[5098]	32 alive at 13 mos	21 mos.
	50 mice	C57BL	25 M, 25 F	Approx. 200 mg. (powdered form)[5089]	S.C., nape of neck.	0	25 alive at 10 mos	21 mos.
	15 rats	Bethesda black	F	2.5 cc. of a 7% soln., wkly. for 8 wks.[5081]	I.V	Tumors[5099]	10 alive at 13 mos	24 mos.
	30 rats	Bethesda black	F	Approx. 500 mg. (powdered form)[5089]	S.C., nape of neck.	Tumors[5100]	19 alive at 13 mos	24 mos.
Lusky, L. M., and Nelson, A. A., 1957.	30 rats	20 Osborne-Mendel, 10 Bethesda Black.	20 M, 10 F	1 cc. of 6% aqueous soln. wkly	S.C	Tumors[5101]		73 wks.

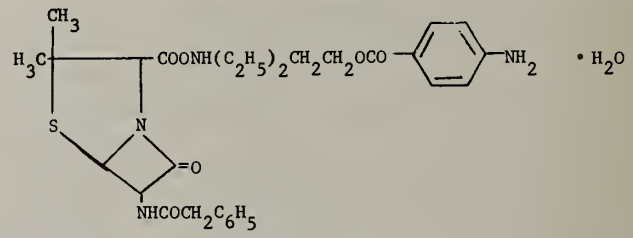
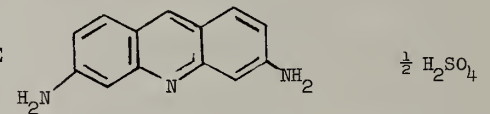
[5081] Avg. molecular wt.: 300,000.
[5082] Avg. molecular wt.: 50,000.
[5084] Avg. molecular wt.: 22,000.
[5089] Avg. molecular wt.: 20,000.
[5090] 1 reticulum cell sarcoma, leukosarcoma, or mesothelioma. 1 hepatic Kupffer cell sarcoma. 1 uterine adenocarcinoma or squamous cell sarcoma.
[5091] 2 reticulum cell sarcomas, leukosarcomas, or mesotheliomas. 3 hepatic Kupffer cell sarcomas. 5 benign tumors.
[5092] 1 reticulum cell sarcoma, leukosarcoma or mesothelioma. 1 hepatic Kupffer cell sarcoma. 3 benign tumors.
[5093] 4 reticulum cell sarcomas, leukosarcomas or mesotheliomas. 3 hepatic Kupffer cell sarcomas. 3 uterine adenocarcinomas or squamous cell sarcomas. 1 dermal squamous cell carcinoma. 3 benign tumors.
[5094] 3 reticulum cell sarcomas, leukosarcomas or mesotheliomas. 3 hepatic Kupffer cell sarcomas. 1 uterine adenocarcinoma of squamous cell carcinoma. 1 dermal squamous cell carcinoma. 3 benign tumors.
[5095] 8 reticulum cell sarcomas, leukosarcomas or mesotheliomas. 1 hepatic Kupffer cell sarcoma. 5 benign tumors.
[5096] 1 uterine adenocarcinoma or squamous cell carcinoma. 3 benign tumors.
[5097] 1 reticulum cell sarcoma.
[5098] 6% with 3 lymphosarcomas, 1 leukemia. Relationship probable.
[5099] 2 reticulum cell sarcomas, leukosarcomas or meosotheliomas. 1 mammary adenocarcinoma.
[5100] 5 reticulum cell sarcomas, leukosarcomas or mesotheliomas. 2 hepatic Kupffer cell sarcomas. 3 benign tumors.
[5101] 13 with injection site fibrosarcomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
930. POLYVINYL PYRROLIDONE (Continued)								
Hueper, W. C., 1959	30 rats	Bethesda black		500 mg. powder once.[5082]	S.C	Tumors[5102, 5103].	All survivors sacrificed.	2 yrs.
	30 rats	Bethesda black		500 mg. powder once.[5089]	S.C	Tumors[5104, 5105].	All survivors sacrificed.	2 yrs.
	30 rats	Bethesda black		500 mg. powder once.[5082]	S.C	Tumors[5102, 5105].	All survivors sacrificed.	2 yrs.
	50 mice	C57BL		200 mg. powder once.[5089]	S.C	0[5105]	All survivors sacrificed.	2 yrs.
	50 mice	C57BL		200 mg. powder once.[5089]	S.C	0[5105]	All survivors sacrificed.	2 yrs.
Hueper, W. C., 1959	30 rats	Bethesda black		500 mg. powder once.[5089]	I.P	Tumors[5105, 5107].	All survivors sacrificed.	2 yrs.
	50 mice	C57BL		200 mg. powder once.[5089]	I.P	Tumors[5106, 5108].	All survivors sacrificed.	2 yrs.
	30 rats	Bethesda black		500 mg. powder once.[5082]	I.P	Tumors[5105, 5109].	All survivors sacrificed.	2 yrs.
	30 rats	Bethesda black		500 mg. powder once.[5081]	I.P	Tumors[5105, 5110].	All survivors sacrificed.	2 yrs.
	15 rats	Bethesda black		18.5 mg. in 7% aqueous soln. total dose 150 mg.[5089]	I.V	Tumors[5105, 5111].	All survivors sacrificed.	2 yrs.
	15 rats	Bethesda black		18.5 mg. in 7% aqueous soln., total dose 150 mg.[5089]	I.V	Tumors[5105, 5112].	All survivors sacrificed.	2 yrs.
	15 rats	Bethesda black		18.5 mg. in 7% aqueous soln., total dose 150 mg.[5081]	I.V	Tumors[5105, 5113].	All survivors sacrificed.	2 yrs.
	15 rats	Bethesda black		18.5 mg. in 7% aqueous soln., total dose 150 mg.[5082]	I.V	Tumors[5105, 5114].	All survivors sacrificed.	2 yrs.
	6 rabbits	Dutch		2,500 mg. in 7% aqueous soln., total dose 22,000 mg.[5089]	I.V	0	All survivors sacrificed.	Up to 4 yrs.
	4 rabbits	Dutch		2500 mg. in 7% aqueous soln. Total dose 22,000 mg.[5089]	I.V	0	All survivors sacrificed.	Up to 4 yrs.
	30 rats	Bethesda black		200 mg. powder once.[5082]	S.C	Tumors[5105, 5115].	All survivors sacrificed.	2 yrs.

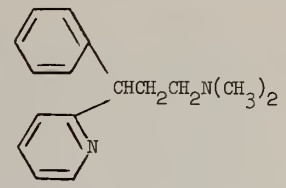
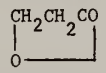
[5081] Avg. molecular wt.: 300,000.
[5082] Avg. molecular wt.: 50,000.
[5089] Avg. molecular wt.: 20,000.
[5102] 7 reticulum cell sarcomas: 2 hepatic, 5 nodal. 1 leukemia. 1 cardiac mesothelioma, 1 ovarian cystadenoma, 1 adrenal hemangioma.
[5103] 200 controls.
[5104] 2 cholangiomas, 1 uterine carcinoma, 1 ovarian cystadenoma.
[5105] 200 controls with 11 reticulum cell sarcomas, 1 pulmonary adenoma, 3 mammary adenofibromas, 1 renal carcinoma, 4 uterine carcinomas, 1 ovarian carcinoma. Controls received various treatments.
[5106] 840 controls with 6 reticulum cell sarcomas. Controls received various treatments.
[5107] 4 nodal reticulum cell sarcomas, 1 hepatic cholangioma, 1 dermal carcinoma, 2 uterine carcinomas, 2 ovarian cystadenomas.
[5108] 1 hepatic reticulum cell sarcoma.
[5109] 1 hepatic cholangioma, 1 hepatic leukemia, 1 cardiac mesothelioma, 3 uterine carcinomas. 1 ovarian cystadenoma.
[5110] 6 hepatic reticulum cell sarcomas, 1 mammary adenofibroma, 2 uterine carcinomas.
[5111] 1 nodal reticulum cell sarcoma, 1 hepatic reticulum cell sarcoma, 1 uterine carcinoma.
[5112] 1 mammary adenofibroma, 1 uterine carcinoma.
[5113] 2 nodal cell sarcomas, 1 uterine carcinoma.
[5114] 3 nodal lymphomas, 2 uterine carcinomas, 1 adrenal adenoma.
[5115] 2 hepatic reticulum cell sarcomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
930. POLYVINYL PYRROLIDONE (Continued)								
	30 rats	Bethesda black		200 mg. powder, total dose 600 mg.[5082]	S.C	Tumors[5105, 5115]	All survivors sacrificed.	2 yrs.
	6 rabbits	Dutch		3,500 mg. in 7% aqueous soln., total dose 5600 mg.[5082]	I.V	0	All survivors sacrificed.	Up to 4 yrs.
	6 rabbits	Dutch		1,700 mg. in 3.5% aqueous soln., total dose 12,600 mg.[5082]	I.V	0	All survivors sacrificed.	Up to 4 yrs.
	25 rats	Bethesda black		500 mg. powder once.[5117]	S.C	Tumors[5105, 5118]	All survivors sacrificed.	2 yrs.
	50 mice	C57BL		200 mg. powder once.[5089]	S.C	Tumors[5106, 5119]	All survivors sacrificed.	2 yrs.
	50 mice	C57BL		200 mg. powder once.[5082]	S.C	0[5105]	All survivors sacrificed.	2 yrs.
	50 mice	C57BL		200 mg. powder once.[5089]	I.P	0[5105]	All survivors sacrificed.	2 yrs.
	30 rats	Bethesda black		500 mg. powder once.[5081]	S.C	Tumors[5105, 5120]	All survivors sacrificed.	2 yrs.
	3 rabbits	Dutch		2,500 mg. in 7% aqueous soln., total dose 22,000 mg.[5082]	I.V	0	All survivors sacrificed.	Up to 4 yrs.
	2 rabbits	Dutch		2,500 mg. in 7% aqueous soln., total dose 22,000 mg.[5081]	I.V	0	All survivors sacrificed.	Up to 4 yrs.
	30 mice	C57BL		200 mg. powder once.[5121]	S.C	0[5105]	All survivors sacrificed.	2 yrs.
	30 mice	C57BL		200 mg. powder once.[5121]	I.P	Tumors[5106, 5122]	All survivors sacrificed.	2 yrs.
	20 rats	Bethesda black		500 mg. powder once.[5121]	S.C	Tumors[5106, 5123]	All survivors sacrificed.	2 yrs.
	20 rats	Bethesda black		500 mg. powder once.[5121]	I.P	Tumors[5106, 5124]	All survivors sacrificed.	2 yrs.
	30 rats	Bethesda black		200 mg. powder once.[5082]	S.C	Tumors[5105, 5125]	All survivors sacrificed.	2 yrs.
	30 rats	Bethesda black		200 mg. powder, total dose 500 mg.[5082]	S.C	Tumors[5105, 5126]	All survivors sacrificed.	2 yrs.

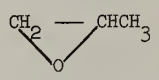
[5081] Avg. molecular wt.: 300,000.
[5082] Avg. molecular wt.: 50,000.
[5089] Avg. molecular wt.: 20,000.
[5105] 200 controls with 11 reticulum cell sarcomas, 1 pulmonary adenoma, 3 mammary adenofibromas, 1 renal carcinoma, 4 uterine carcinomas, 1 ovarian carcinoma. Controls received various treatments.
[5108] 840 controls with 6 reticulum cell sarcomas. Controls received various treatments.
[5116] 2 nodal reticulum cell sarcomas, 1 hepatic reticulum cell sarcoma, 2 mammary adenofibromas, 2 uterine carcinomas.
[5117] Avg. molecular wt.: 120,000.
[5118] 1 hepatic cholangioma, 4 hepatic reticulum cell sarcomas, 1 pulmonary mesothelioma, 2 mammary adenofibromas, 1 uterine carcinoma.
[5119] 3 lymphomas.
[5120] 6 reticulum cell sarcomas (2 hepatic, 4 nodal), 1 cardiac mesothelioma, 1 dermal squamous cell carcinoma, 1 dermal squamous cell carcinoma, 1 uterine carcinoma, 2 ovarian cystadenomas.
[5121] Avg. molecular wt.: 10,000.
[5122] 1 lymphoma, 1 cardiac mesothelioma.
[5123] 1 nodal reticulum cell sarcoma, 3 hepatic reticulum cell sarcomas, 2 uterine carcinomas.
[5124] 2 nodal reticulum cell sarcomas, 1 hepatic reticulum cell sarcoma.
[5125] 4 nodal reticulum cell sarcomas, 1 hepatic reticulum cell sarcoma. 2 uterine carcinomas.
[5126] 1 nodal reticulum cell sarcoma, 1 hepatic reticulum cell sarcoma. 6 uterine carcinomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
930. POLYVINYL PYRROLIDONE (Continued)								
	6 rabbits	Dutch		3,500 mg. in 7% aqueous soln., total 5600 mg.[5082]	I.V	0	All survivors sacrificed.	Up to 4 yrs.
	50 mice	C57BL		200 mg. powder once.[5082]	I.P	Tumors[5105, 5127].	All survivors sacrificed.	2 yrs.
	50 mice	C57BL		200 mg. powder once.[5081]	I.P	0[5106]	All survivors sacrificed.	2 yrs.
	30 rats	Bethesda black		500 mg. powder once.[5089]	S.C	Tumors[5105, 5128].	All survivors sacrificed.	2 yrs.
931. PROCAINE-PENICILLIN G. 								
Seifter, J., 3t al., 1954	5 dogs			500,000–1,000,000 units, 6 times/wk. for total of 31 doses.	I.M	0		5 wks.
932. PROFLAVINE HEMISULFATE 								
Salaman, M. H., and Glendenning, O. M., 1957.	20 mice	S albino	M	0.1 ml. of 0.1% in dist. water given to 4 sites, in rotation, once a wk. for 24 wks.	Intradermal inj.	0[5129]		At least 36 wks.
	20 mice	S albino	M	0.3 ml. of 1% soln. in 1 part water, 2 parts carbowax 300 once wkly. for 24 wks.	Skin	0		31 wks.
	20 mice	S albino	M	2.5 mg. of crystalline suspended in paraffin wax in 2 pellets, 16 mm. long and 1.5 mm. dia.	S.C. parallel to spinal column.	0		47 wks.

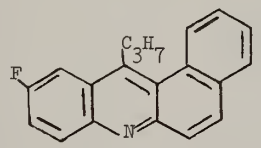
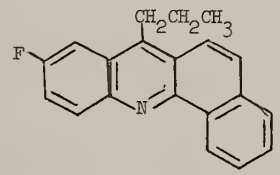
[5081] Avg. molecular wt.: 300,000.
[5082] Avg. molecular wt.: 50,000.
[5089] Avg. molecular wt.: 20,000.
[5105] 200 controls with 11 reticulum cell sarcomas, 1 pulmonary adenoma, 3 mammary adenofibromas, 1 renal carcinoma, 4 uterine carcinomas, 1 ovarian carcinoma. Controls received various treatments.
[5105] 840 controls with 6 reticulum cell sarcomas. Controls received various treatments.
[5127] 3 lymphomas.
[5128] 6 reticulum cell sarcomas (2 hepatic, 4 nodal), 1 adrenal hemangioma.
[5129] 1 injection site tumor 5 wks. after treatment, regressed 7 wks. later.

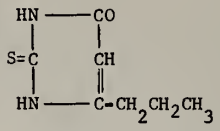
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
933. PROPHENPYRIDAMINE 								
Labelle, A., and Tislow, R., 1955.	3 dogs			2.00 mg./kg. in gelatin capsule given 5 times/wk. for 180 d.	P.O	0	100%	180 d.
	10 mice	Albino	M	10, 20, 40 or 80 mg./kg. in gelatin capsule given 5 times/wk. for 60 d.	P.O	0[5131]		60 d.
	Rats	Sprague-Dawley.	M & F	5 mg./kg.[5130] avg. daily dose in diet for lifetime.	P.O	0[5131]		([5132]).
	12 rats	Sprague-Dawley.	F	0.005[5130] or 0.025% of diet for 12 wks.	P.O	0[5131]		12 wks.
	12 rats	Sprague-Dawley.	F	0.005[5130] or 0.025% in diet for 12 wks.[5133]	P.O	0[5131]		12 wks.
	6 rabbits			2 drops of 0.5% soln.[5133] 3 times/d. at 2 hr. intervals for 30 d.	Eye, topical	0[5134]		30 d.
	10 mice	Albino	M	10, 20, 40 or 80 mg./kg.[5133] in gelatin capsule given 5 times/wk. for 60 d.	P.O	0[5131]		60 d.
934. β-PROPIOLACTONE 								
Walpole, A. L., et al., 1954	6 rats	Albino	F	Total of 48 mg./100 g. in total of 2.4 ml./100 g. arachis oil[5135] twice for 90 dosing d.	S.C. r. flank	Tumors[5136, 5137].	1 died at 234 d	321 d. or more.
	6 rats	Albino	M	Total of 44 mg./100 g. in total of 2.2 ml./100 g. arachis oil[5135] twice wkly. for 90 dosing d.	S.C. r. flank	Tumors[5137, 5138].	1 died at 59 d	508 d.
Roe and Salaman, 1955	20 mice	Albino, "S" strain.	M	2 wkly. 0.3 ml. doses, 10% and 5% soln. (in acetone) respectively, followed after an interval of 2 wks., by 12 wkly. 0.3 ml. applications of 2.5% soln. in acetone (total dose: 155.0 mg.[5139]).	Skin	15 (160 skin tumors).	19 at 18 wks	At least 19 wks.

[5130] As the hydrochloride.
[5131] No pathology.
[5132] Lifetime experiment, carried through 3 generations.
[5133] As the maleate.
[5134] No lesions.
[5135] Sterilized (140° C for 1 hr.).
[5136] 4 with injection site sarcoma.
[5137] 12 arachis oil controls with 5 injection site sarcomas, 3 other-site tumors.
[5138] 5 with injection site sarcoma.
[5139] 18 weekly applications of 0.3 ml. 0.5% croton oil in acetone alternated (3–4 day intervals) with treatment; begun 24 days after first treatment.

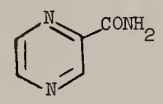
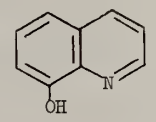
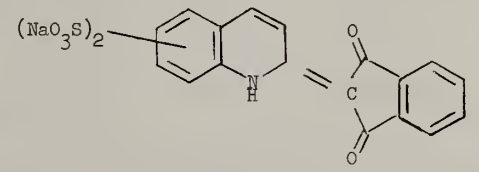
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
934. β-PROPIOLACTONE (Continued)								
Roe and Glendenning, 1956	32 mice	Albino, "S" strain.	12 M, 20 F	Single dose ranging from 1 mg. to 10 mg. in Ringer soln.	I.V., tail	3 (skin tumors).[5140]	26 at 6 mos	At least 6 mos.[5141]
	10 mice	Albino, "S" strain.	M & F	0.3 ml. of 2.5% soln. in acetone, wkly. for 52 wks.	Skin	5 (skin tumors).[5142]	9 at 48 wks	55 wks.
Roe and Glendenning, 1956	20 mice	Albino "S" strain	M & F	0.3 ml. of 2.5% soln. in acetone wkly.[792]	Skin	2 (skin tumors).[793]	4 at 40 wks	40 wks.[794]
935. PROPYLENE OXIDE 								
Rowe, V. K., et al., 1956	8 guinea pigs		F	128 exposures of 195 ppm. of vapor 7 hrs./d., 5 d./wk., within 183 d.	Inhalation	0		183 d.
	4 rabbits		2 M, 2 F	154 exposures of 195 ppm. of vapor 7 hrs./d., 5 d./wk., within 218 d.	Inhalation	0		218 d.
	2 monkeys		F	154 exposures of 195 ppm. of vapor 7 hrs./d., 5 d./wk., within 218 d.	Inhalation	0		218 d.
	17 rats		M	138 exposures of 102 ppm. of vapor 7 hrs./d., 5 d./wk., within 198 d.	Inhalation	0	High mortality due to pneumonia.	198 d.
	14 rats		F	138 exposures of 102 ppm. of vapor 7 hrs./d., 5 d./wk., within 198 d.	Inhalation	0	High mortality due to pneumonia.	198 d.
	8 guinea pigs		M	128 exposures of 102 ppm. of vapor 7 hrs./d., 5 d./wk., within 183 d.	Inhalation	0		183 d.
Rowe, V. K., et al., 1956	8 guinea pigs		F	128 exposures of 102 ppm. of vapor 7 hrs./d., 5 d./wk., within 183 d.	Inhalation	0		183 d.
	4 rabbits		2 M, 2 F	154 exposures of 102 ppm. of vapor 7 hrs./d., 5 d./wk., within 218 d.	Inhalation	0		218 d.
	2 monkeys		F	154 exposures of 102 ppm. of vapor 7 hrs./d., 5 d./wk., within 218 d.	Inhalation	0		218 d.
	8 guinea pigs		F	110 exposures of 457 ppm. of vapor 7 hrs./d., 5 d./wk., within 157 d.	Inhalation	0		157 d.
	5 rats		M	79 exposures of 457 ppm. of vapor 7 hrs./d., 5 d./wk., in 112 d.	Inhalation	0	High mortality due to pneumonia.	112 d.
	8 guinea pigs		M	110 exposures of 457 ppm. of vapor 7 hrs./d., 5 d./wk., within 157 d.	Inhalation	0		157 d.

[792] Higher concentrations (5–10%) given for first 5 weeks to produce and maintain ulceration.
[793] 1 with 2 epitheliomas; 1 with 1 epithelioma and 1 papilloma.
[794] Experiment remains in progress (4 survivors at 40 weeks).
[5140] Multiple injection site papillomas.
[5141] Experiment in progress; 8 survivors.
[5142] 1 papilloma, 2 carcinomas (1 metastatic), 2 questionable carcinomas.

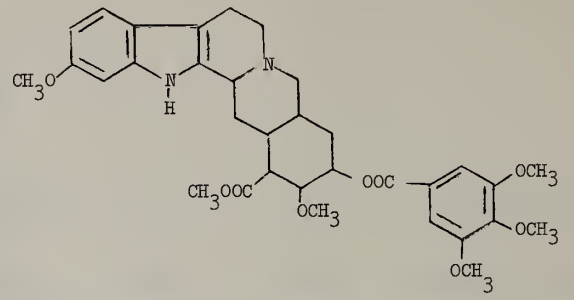
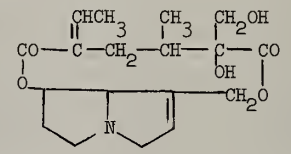
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
935. PROPYLENE OXIDE (Continued)								
	2 rabbits		1 M, 1 F	154 exposures of 457 ppm. of vapor 7 hrs./d., 5 d./wk., within 218 d.	Inhalation	0		218 d.
	1 monkey		F	154 exposures of 457 ppm. of vapor 7 hrs./d., 5 d./wk., within 218 d.	Inhalation	0		218 d.
	16 rats		M	138 exposures of 195 ppm. of vapor 7 hrs./d., 5 d./wk., within 198 d.	Inhalation	0	High mortality due to pneumonia.	198 d.
	17 rats		F	138 exposures of 195 ppm. of vapor 7 hrs./d., 5 d./wk., within 198 d.	Inhalation	0	High mortality due to pneumonia.	198 d.
	8 guinea pigs		M	128 exposures of 195 ppm. of vapor 7 hrs./d., 5 d./wk., within 183 d.	Inhalation	0		183 d.
	3 rats		F	138 exposures of 457 ppm. of vapor 7 hrs./d., 5 d./wk., within 198 d.	Inhalation	0	High morality due to pneumonia.	198 d.
936. 10-n-PROPYL-3-FLUORO-5,6-BENZACRIDINE 								
Lacassagne, A., et al., 1955	10 mice	XVII	M & F	3 times 0.5 mg. in peanut oil at 1 mo. intervals.	S.C	0	9 at 90 d	381 d.
937. 10-n-PROPYL-3-FLUORO-7,8-BENZACRIDINE 								
Lacassagne, A., et al., 1955	20 mice	XVII	M & F	3 times 0.5 mg. in peanut oil at 1 mo. intervals.	S.C	0	16 at 90 d	409 d.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
938. 6-n-PROPYL-2-THIOURACIL 								
D'Angelo, S. A., et al., 1954	5 guinea pigs.[5143]		F	0.1% added to basic ration of Purina Omolene Chow daily for 80 d.	P.O	0[5144]	Mortality appreciable with prolonged treatment.	80 d.
	3 guinea pigs.[5143]		F	0.1% added to basic ration of Purina Omolene Chow daily for 60 d.	P.O	0[5145]	Mortality appreciable with prolonged treatment.	60 d.
	3 guinea pigs.[5143]		F	0.1% added to basic ration of Purina Omolene Chow daily for 47 d.	P.O	0[5145]	Mortality appreciable with prolonged treatment.	47 d.
	3 guinea pigs.[5143]		F	0.1% added to basic ration of Purina Omolene Chow daily for 100 d.	P.O	0[5146]	Mortality appreciable with prolonged treatment.	100 d.
	4 guinea pigs.[5143]		F	0.1% added to basic ration of Purina Omolene Chow daily for 200 d.	P.O	0[5147]	Mortality appreciable with prolonged treatment.	200 d.
Durlach, J., et al., 1954	9 guinea pigs		M	12.5 mg. daily for 10 d., 18.5 mg. daily for 10 d., 25 mg. daily for 13 d.	S.C	0		27–30 d.
Zimmerman, L. M., et al., 1954.	Rats	White		0.1% in drinking water ad. libitum	P.O	Tumors[5148]	15 alive at 1 yr	About 1 yr.
Zeckwer, I. T., et al., 1954	Mice	Swiss	M	0.1% in the drinking water	P.O	0[5149]	Killed at 60 to 90 d.	90 d.
Calhoon, T. B., 1955	14 frogs		M	0.033 mg./g.[5150] wet wt. susp. in 0.65% saline, 3 times/wk. for 5 wks., given no food.	S.C	0[5131]		5 wks.
D'Angelo, S. A., 1955	Rats[5151]	Albino-Wistar	M & F	0.05% in diet for 2, 3, 4 and 10 mos. period.	P.O	0[5152]		Up to 10 mos.
Logothetopoulos, J. H., and Scott, F. R., 1956.	Guinea pigs		F	40–50 mg. daily in drinking water given after mating for 50–60 d.	P.O			Up to 65 d.
	Guinea pigs[5153].		F	40–50 mg. daily in drinking water for 50–65 d.	P.O			Up to 65 d.

[5131] No pathology.
[5143] Young adult.
[5144] Extensive thyroid hyperplasia.
[5145] Thyroid hyperplasia.
[5146] Extensive thyroid hyperplasia.
[5147] Extensive thyroid hyperplasia.
[5148] 4 thyroid adenomas.
[5149] Mild thyroid hyperplasia.
[5150] Powdered.
[5151] Adult.
[5152] Thyroid hyperplasia.
[5153] Mated 15–30 days before treatment.

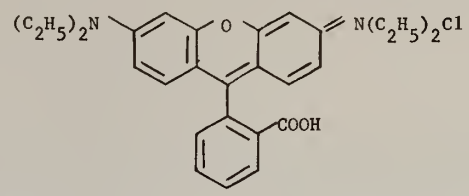
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
939. PYRAZINAMIDE 								
Kazuo, M., et al., 1950	Mice			3% in diet	P.O	Tumors[5154]	5 at 7 mos	7 mos.
Mori, K., et al., 1960	Mice	dd	F	3% in diet	P.O	Tumors[5155]	5 at 7 mos., killed	7 mos.
940. QUINISATIN OXIME 								
Haddow, A., and Horning, E. S., 1960.	20 mice	Stock		1 mg. wkly. for 41 wks	S.C	0	19 at 9½ mos	9½ mos. to date.
941. QUINOLIN YELLOW 								
Nothdurft, unpublished data.[5156]	40 rats			1%	P.O	0	10 died	
Oettel, unpublished data[5156]	20 rats			1 ccm. of 2%, total 55 injs. for 7 mos.	S.C	Tumors[5157]		At least 7 mos.

[5154] 60% with pulmonary tumors (0.8 nodules/mouse). 3% of 36 seven-month controls with pulmonary tumors.
[5155] 3 with pulmonary adenomas (1 multiple) at 7 mos.
[5156] Recorded in "Toxikilogische Daten . . . etc."
[5157] 1 intraperitoneal sarcoma.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
942. RESERPINE 								
Eränkö, O., et al., 1957	Rats		M	0.04 mg. daily for 2 mos	S.C	0[6168]	All sacrificed at end of exper.	2 mos. & 9 d.
Hurst, L., et al., 1958	10 rats	Sprague		0.08 mg. daily in food	P.O	0		10 mos.
943. RETRORSINE 								
Schoental, R., et al., 1954	14 rats	Wistar	M & F	0.03 mg./ml. in drinking water ad lib, 3 d./wk.	P.O	4[6169]		23 mos.
Schoental, R., and Head, M. A., 1957.	2 rats	Wistar	F	25–30 mg./kg. body wt. at 4 wkly. and 2 mnthly. intervals.	I.P	0[6160,6161]	100%	25 mos.
	2 rats	Wistar	F	25–30 mg./kg. body wt. at 4 wkly. intervals and 2 mthly. intervals, betaine supplemented diet.	I.P	Tumors[6162, 6163].	1 died at 28 mos	29 mos.
Schoental, R., 1959	8 rats	Wistar of Porton strain.		27 mg./kg. at 5 d. of age, 16 mg./kg. at 14 d. of age.	Inj	0[6164]	6 died in 15 d., 1 at 66 & 1 at 83 d.	83 d.
	23 rats[6166]	Wistar of Porton strain.	F	Varying doses of 4–10 mg. in 1–14 doses, total 21–335 mg./kg.	P.O. (stomach tube)-17, I.P.-6.	0[6166]	3 at 10 mos	Up to 10 mos.
Schoental, R., and Magee, P. N., 1959.	42 rats	Wistar	M & F	30–39 mg./kg. once	P.O. (stomach tube).	0[6167]	26 at 11 d., 19 at 18 mos.	Up to 30 mos.
	12 rats	Wistar	M & F	20–29 mg./kg	P.O. (stomach tube).	0[6167]	10 at 12 mos	Up to 30 mos.

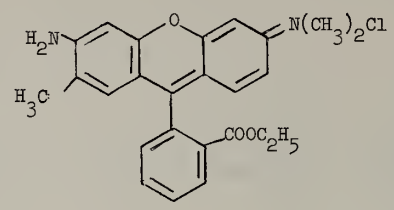
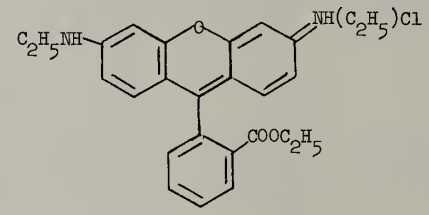
[5168] Endocrine Study.
[6169] Hepatomas.
[6160] Hepatic nodules.
[6161] 16 untreated controls with 1 mammary fibroadenoma, 1 ovarian tumor with metastases.
[6162] Hepatic nodules (1 hepatoma).
[5163] 3 untreated controls negative.
[6164] Two deaths at 66th and 83rd day with premalignant hepatic lesions.
[6166] Lactating.
[6166] Hepatic lesions in deaths under 6 mos. Litter mates died within 7 wks. with hepatic lesions.
[6167] Subacute and chronic hepatic lesions.

944. RHODAMINE B

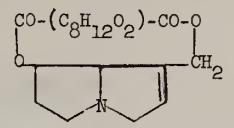
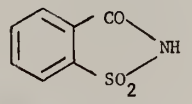
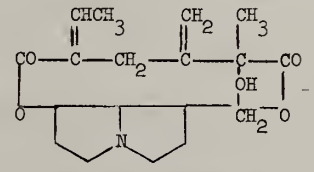


Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
Umeda, M., 1955	30 rats	Wistar		1 cc. of 0.5 g./10 cc in dist. water 2–3 times/wk. for 2 mos. Then 1 cc. of 0.75 g./10 cc. dist. water 2–3 times/wk. for 5 mos., 1 cc. of 1.0 g./10 cc. dist. water 2–3 times/wk.	S.C.	Tumors[5168]	11 survived more than 436 d.	765 d.
Bonser, et al., 1956	15 mice	Stock Albino	M	0.05% in drinking water for 52 wks. (Total dose per mouse, 884 mg.)	P.O.	Tumors[5169]	10 alive at 20 wks.	More than 90 wks.
	15 mice	Stock Albino	F	0.05% in drinking water for 52 wks. (Total dose per mouse, 884 mg.)	P.O.	3 (lymphomas).	5 alive at 20 wks.	More than 90 wks.
Umeda, Masao, 1956	300 mice	Saitama	120 M, 180 F	0.1 cc. of 0.5 g./10 cc watery soln. 2–3 times/wk. Conc. increased to 0.7 g./10 cc. after 1 mo., reduced to 0.5 g./10 cc. after another mo. after 6 mos. discontinued for 2 mos., resumed again after that. Total of 37.2–42.2 mg.[5170]	S.C. inj. in back.	0	10 survived more than 280 d.	363 d.
	25 mice	Mixed	M & F	0.1 cc. of 0.5 g./10 cc. watery soln. 2 times/wk. Conc. was reduced to 0.25 g./10 cc. after 1.5 mos., increased to 0.5 g./10 cc. again after 4 mos. Total of 14.45—28.25 mg.[5170]	S.C. inj. in back.	0	6 survived 150 d. or more.	260 d.
	21 rats	Mixed	M & F	1.3 g./kg. of rice for about 7 mos., increased to 2.0 g./kg. Total of 6.07—15.7 g.[5170]	P.O.	0[5171]	18 survived 300 d. or more.	661 d.
	20 rats	Albino	M & F	1 cc. 0.5 g./10 cc. watery soln.[5172] 2–3 times/wk. Conc. increased to 0.75 g./10 cc. after 1.5 mos., to 1 g./10 cc. after 3 mos., to 1.5 g./10 cc. after 9 mos. After 1 yr. gradually decreased, discont. for about 1.5 mos., and then again resumed. Total of 900–2005 mg.[5170]	S.C. in back	Tumors[5173]	10 died early, 10 lived 420 d. or more.	750 d.
	30 rats	Wistar descent	17 M, 13 F	1 cc. 0.5 g./10 cc. watery soln.[5172] 2–3 times/wk. Conc. increased to 0.75 g./10 cc. after 2 mos., to 1 g./10 cc. after 5 mos. Total of 820–1110 mg.[5170]	S.C. in back at same site.	Tumors[5174]	19 died early, 11 lived 436 d. or more.	765 d.

[5168] 2 spindle cell fibrosarcomas at 476 and 576 days.
[5169] 4 lymphomas, 1 benign enteric polyp, 1 enteric carcinoma.
[5170] Color Index No. 749.
[5171] 1 thymic hypertrophy.
[5172] Heat sterilized before injection.
[5173] 6 injection site fibrosarcomas (2 metastatic).
[5174] 1 spindle cell fibrosarcoma, 1 spindle cell sarcoma. Thymic hypertrophy (probably spontaneous).

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
				945. RHODAMINE 3G 				
Umeda, Masao, 1956	20 rats	Mixed	M & F	1 cc. of 0.2 g./10 cc. dist. water soln. once/wk., after 7 mos. inj. reduced to 2–3 times/mo. Total of 64–66 mg.[5175]	S.C. inj. in back.	0	4 survived 300 d. or more.	367 d.
				946. RHODAMINE 6G 				
Umeda, M., 1954	16 rats[5176]	Mixed, Saitama	M & F	1 cc. of 20 mg./10 cc. in dist. water 2–3 times/wk. Avg. of 100 inj.	S.C. back	Tumors[5177]	7 survived 487 d	628 d.
Umeda, Masao, 1956	16 rats	Mixed	M & F	1 cc. of 20 mg./10 cc. dist. water soln. [5172] 2–3 times/wk. for about 4 mos., discont. for about 1 mo., then again resumed.[5178]	S.C. inj. in back at same site.	Tumors[5179]	7 survived 487 d. or more.	645 d.
	40 mice	Mixed	M & F	50 mg./100 g. of rice for 6 wks., reduced to 10 mg./100 g. for next wk., increased to 20 mg./100 g. for rest of experimental period. Total of 90.6 mg. [5178]	P.O	0[5180]	12 survived 100 d. or more.	223 d.

[5172] Heat sterilized before injection.
[5175] Color Index No. 753.
[5176] Weight 200 gms.
[5177] 4 injection site sarcomas at 511–628 days.
[5178] Color Index No. 752.
[5179] 1 spindle cell sarcoma at 511 days. 3 spindle cell fibrosarcomas at 531–557 days. 1 with cysticercus hepatic sarcoma and mammary fibroadenoma (probably spontaneous).
[5180] 1 with hepatic cirrhosis. Most with gastric hyperkeratosis, hyperplasia and papillomatosis.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
947. RIDDELLIINE 								
Schoental, R., and Head, M. A., 1957.	20 rats	Wistar	14 F, 6 M	0.02 mg./ml. in drinking water and 25–30 mg./kg. body wt. up to 1 yr., normal diet.	P.O. and I.P.	Tumors[5181, 5182].	16 at 1 yr.	2½ yrs.
Schoental, R., and Magee, P. N., 1959.	16 rats	Wistar	M & F	50–125 mg./kg. once	P.O. (stomach tube).	0[5183]	3 at 11 d	Up to 60 d.
	8 rats	Wistar	M & F	25–29 mg./kg. once	P.O. (stomach tube).	0[5183]	3 at 18 mos	Up to 30 mos.
	11 rats	Wistar	M & F	30–39 mg./kg. once	P.O. (stomach tube).	0[5183]	4 at 12 mos	Up to 30 mos.
948. SACCHARIN 								
Salaman and Roe, 1956	20 mice	Albino "S" strain.		10 thrice wkly. applications of 8% soln. in acetone (total dose—0.24 g.)[5184]	Skin	7 (total of 14 pap.).	None died during course of treatment.	Approx. 30 wks.
Allen, M. J., et al., 1957	20 mice			1 part/4 parts cholesterol in 9–11 mg. pellet implant.	Urinary bladder	Tumors[5185, 5186].	9 at 52 wks	52 wks.
	20 mice			1 g./kg. body wt. twice wkly. for 12 wks.	Inj	0	12 at 1 yr., 8 killed at 2 yrs.	2 yrs.
949. SENECIPHYLLINE 								
Schoental, R., and Magee, P. N., 1959.	14 rats	Wistar	M & F	30–39 mg./kg. once	P.O. (stomach tube).	0[5183]	8 at 18 mos	Up to 30 mos.
	32 rats	Wistar	M & F	40–99 mg./kg. once	P.O. (stomach tube).	0[5183]	1 at 2 mos	At least 2 mos.

[5181] 1 cholangeal cystadenomata, 1 cysticercus hepatic sarcoma with metastases. 1 mammary fibroadenoma, 1 questionable hepatoma.

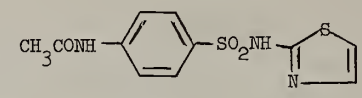
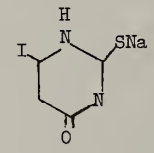
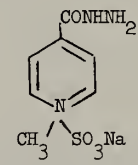
[5182] 16 untreated controls with 1 mammary fibroadenoma, 1 ovarian tumor with metastases.

[5183] Subacute and chronic hepatic lesions.

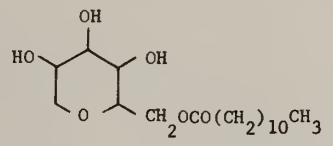
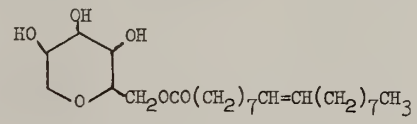
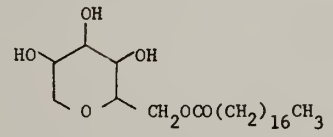
[5184] Weekly application of croton oil in acetone (2 of 0.085%, 16 of 0.17%) begun 25 days after first treatment.

[5185] 1 papilloma or adenoma, 3 urinary cystic carcinomas.

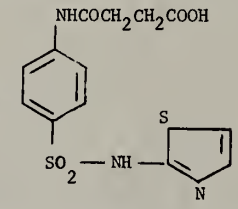
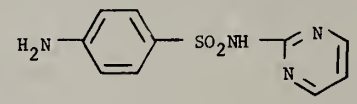
[5186] 1/24 cholesterol controls with urinary cystic carcinoma.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
950. SODIUM N4-ACETYL SULFATHIAZOL 								
Geiser, W., 1957	60 golden hamsters.			0.15–0.25 g./kg. body wt. every 8–12 d.	I.P	0	Life	At least 400 d.
	9 rabbits			10% soln. in saline 0.3 g./kg. body wt. once every 5–7 d.	I.V	0	Life	At least 150 d.
	90 rats			5% in saline 0.2–0.3 g./kg. body wt. every 8–12 d.	I.P	0	Life	At least 170 d.
	10 guinea pigs			5% in saline 0.3 g./kg. body wt. once every 5–7 d.	I.P	0	Life	At least 250 d.
951. SODIUM 5-IODO 2-THIOURACIL 								
Money, W. L., et al., 1957	50 rats	Sprague-Dawley.	M	.1% in drinking water up to 25 mos	P.O	Tumors[5187]	19 killed from 9–25 mos.	Up to 25 mos
	50 rats	Wistar	F	0.1% in drinking water up to 25 mos	P.O	Tumors[5188]	12 killed from 9–25 mos.	Up to 25 mos.
952. SODIUM ISONICOTINYL HYDRAZINE METHANESULFONATE 								
Kazuo, M., et al., 1960	Mice			0.4% in diet	P.O	Tumors[5189]	8 at 7 mos	7 mos.
Mori, K., et al., 1960	Mice	dd	F	0.4% in diet	P.O	Tumors[5190]	8 at 7 mos., killed	7 mos.

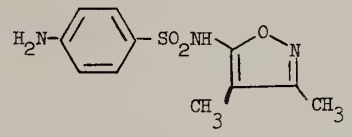
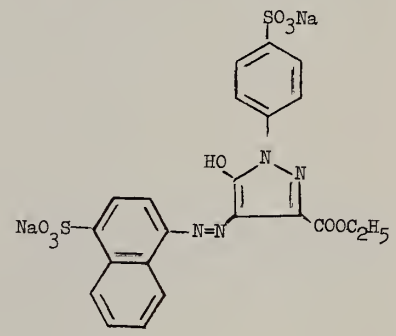
[5187] 15/19 with thyroid tumors (some multiple).
[5188] 6/12 with thyroid tumors (1 multiple).
[5189] 62.5% with tumors (1.1 nodules/mouse). 3% of 36 seven-month surviving controls with tumors.
[5190] 5 with pulmonary adenomas (2 multiple) at 7 mos.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
953. SORBITAN MONOLAURATE[5191] 								
Setälä, K., et al., 1954	50 mice	White	M	Painted twice daily for 24 wks	Skin	0		24 wks.
Setala, H., 1956	50 mice	White	M	100% soln. once daily, 6 d./wk. for 52 wks.	Skin	Tumors[5192]	42 at 33 wks	52 wks.
	50 mice	White	M	100% soln. twice daily, 6 d./wk. for 52 wks.	Skin	Tumors[5193]	35 at 38 wks	52 wks.
954. SORBITAN MONOOLEATE[5194] 								
Setala, H., 1956	50 mice	White	M	100% soln. once daily, 6 d./wk. for 52 wks.	Skin	Tumors[5195]	37 at 36 wks	52 wks.
Setälä, K., et al., 1957	50 mice	Albino	M	100% soln. 6 times/wk	Skin	0		24 wks.
955. SORBITAN MONOSTEARATE 								
Setala, K., et al., 1959	Mice	White	M	0.18 mole[5196]				
	Mice	White	M	0.18 mole conc. applied 12 times wkly. (twice daily) for duration of experiment.	Skin	0	100%	Up to 30 d.
	Mice	White	M	0.18 mole. conc. applied 6 times wkly. for duration of experiment.	Skin	0	100%	Up to 30 d.

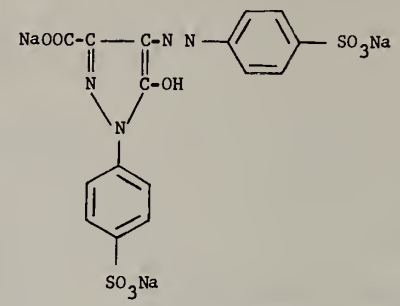
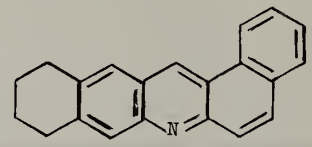
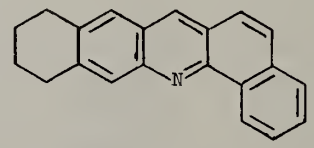
[5191] Span 20.
[5192] 1/1 benign dermal tumor at 33 wks.
[5193] 1/1 benign dermal tumor at 38 wks.
[5194] Span 80.
[5195] 1/1 benign dermal tumor at 36 wks.
[5196] Technical Span 60.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
956. STEAROYL ETHYLENEIMINE								
Walpole, A. L., et al., 1954	12 rats	Albino	6 āā	Total of 110 mg./100 g. in total of 2.75 m./100 g. arachis oil[4644] twice wkly. for 35 dosing d.	S.C. r. flank	Tumors[5197, 5198].		509 d. or more.
957. STREPTOMYCIN SULFATE								
Uram, J. A., et al., 1955	40 rats[5199,5200]	Wistar	30 F, 10 M	0.03% in basal diet[5201] about 100 d	P.O.	0[5202]		More than 100 d.
958. 2-(N⁴-SUCCINYL-SULFANILAMIDO)-THIAZOLE 								
Schwartz, M. A., et al., 1954	8 guinea pigs		M	2%[5203] in the diet for 6 wks	P.O.	0[5204]		6 wks.
959. SULFADIAZINE 								
Schnitzer, R. J., et al., 1955	5 rabbits			0.25 g./kg. susp. in 5% gum acacia daily for 30 d.	P.O. stomach tube.	0	2 died	30 d.
	10 rabbits			1.0 g./kg. susp. in 5% gum acacia daily for 42 d.	P.O. stomach tube.	0[5205]	1 at 42 d	42 d.
	4 rabbits			0.50 g./kg. susp. in 5% gum acacia daily for 30 d.	P.O. stomach tube.	0[5205]	100%	30 d.

[4644] Sterilized (140° C for 1 hr.).
[5197] 7 with injection site sarcoma, 1 injection site mammary carcinoma, 1 anaplastic uterine carcinoma.
[5198] 24 arachis oil controls with 3 non-injection site tumors.
[5199] Weanling.
[5200] Replication with 18 female second generation rats.
[5201] Refrigerated until used.
[5202] No difference in reproduction.
[5203] "Sulphasuxidine".
[5204] No necropsy data.
[5205] Renal lesions.

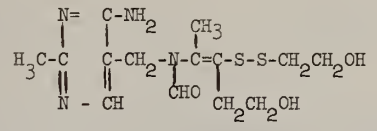
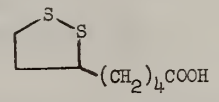
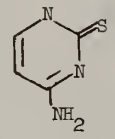
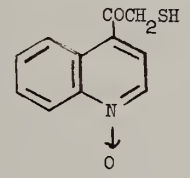
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
960. SULFISOXAZOLE 								
Schnitzer, R. J., et al., 1955	16 rabbits			1.0 g./kg. susp. in 5% gum acacia daily for 42 d.	P.O. stomach tube.	0	15 at 42 d	42 d.
	Chickens[5206]	White-Leghorn		1% in diet for 6 wks	P.O	0		6 wks.
	Chickens[5206]	White-Leghorn		2% in diet for 6 wks	P.O	0		6 wks.
	10 rats[5206]	Sprague-Dawley.		1% in diet for 7–10 wks	P.O	0		10 wks.
	10 rats[5206]	Sprague-Dawley.		2% in diet for 7–10 wks	P.O	0		10 wks.
961. 1-SULFOPHENYL-3-ETHYLCARBOXY-4-(4-SULFONAPHTHOAZO)-5-HYDROXYPYRAZOLE, DISODIUM SALT 								
Hallesy, D., and Doull, J., 1956.	Rats	Sprague-Dawley.	M & F	Aqueous solns	P.O. (stomach tube).	0		30 d.
	Rats	Sprague-Dawley.	M & F	Aqueous solns	I.P	0		30 d.

[5206] Young.

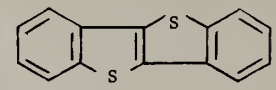
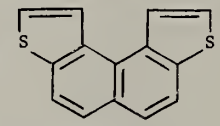
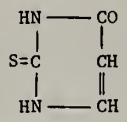
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
962. TARTRAZINE[5207] 								
Nelson, Arthur A., and Hagan, E. Conway, 1953.	18 rats	Osborne-Mendel.	M & F	2 or 3%, 1 ccm. wkly, for 693 d	S.C	0		693 d.
Klinke, unpublished data[5156]	85 rats			10–15 mg. daily as 0.1% in food for lifetime.	P.O	0		
963. 2,3-TETRAMETHYLENE-5,6-BENZACRIDINE 								
Lacassagne, A., et al., 1955	20 mice	XVII	M & F	3 times 0.5 mg. in peanut oil at 1 mo. intervals.	S.C	0	5 at 90 d	383 d.
964. 2,3-TETRAMETHYLENE-7,8-BENZACRIDINE 								
Lacassagne, A., et al., 1955	20 mice	XVII	M & F	3 times 0.5 mg. in peanut oil at 1 mo. intervals.	S.C	0	9 at 90 d	297 d.

[5166] Recorded in "Toxikilogische Daten . . . etc."

[5207] FD&C Yellow No. 5.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
965. THIAMINE-β-HYDROXYETHYL DISULFIDE 								
Ishikawa, I., Ishidate, M., Kajiwara, K., Fujita, S., Komatsu, M., and Aramaki, Y., Takeda Kenkyuoho Nempo *17*, 83–91 (1958).	Rats			40–1000 ppm. in food	P.O	0		6 mos.
966. THIOCTIC ACID 								
Boni, P., et al., 1955	Rats			15 mg./kg. body wt., daily for 60 d	I.P	0[5208]	All alive	60 d.
967. 2-THIOCYTOSINE 								
Barbieri, P., et al., 1957	Rats	Albino	M & F	100 mg./kg. body wt., daily for 39 d	S.C	0[5208]	All alive at 39 d	39 d.
968. 4-THIOGLYCOLYLQUINOLINE N-OXIDE 								
Nakahara, W., and Fukuoka, F., 1959.	Mice	Mixed		Total 7 mg. as propylene glycol emulsion given in 9 wkly. injs. in 56 d.	S.C	0	13 at 200 d	402 d.

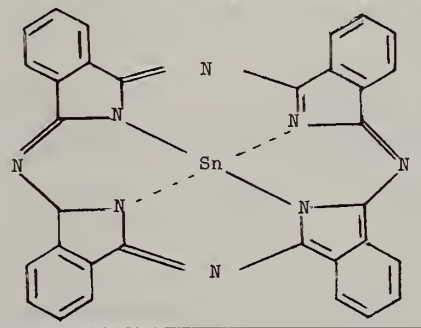
[5208] Toxicological Study. Erythrocyte and leucocyte reduction.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
				969. THIONAPHTHENO-[2,3:3′,2′]-THIONAPHTHENE 				
Waravdekar and Ranadive, 1957.	12 mice[5209]	Swiss	F	1 inj. of 2 mg. of compound in 2 ml. of tricaprylin.	S.C	0	Sacrificed when they appeared weak & emaciated.	15–24 mos.
	12 mice[5209]	Swiss	F	1 drop of 0.5% soln. in benzene twice a wk.	Skin	0	Sacrificed when they appeared weak & emaciated.	17–19 mos.
				970. THIONAPHTHENO-[4,5;4′,5′]-THIONAPHTHENE 				
Waravdekar and Ranadive, 1957	12 mice[5209]	Swiss	F	1 inj. of 2 mg. of compound in 2 ml. of tricaprylin.	S.C	0	Sacrificed when they appeared weak & emaciated.	18–22 mos.
	12 mice[5209]	Swiss	F	1 drop of 0.5% soln. in benzene twice a wk.[5210]	Skin	0	Sacrificed when they appeared weak & emaciated.	15–17 mos.
				971. THIOURACIL 				
Clausen, H. J., 1954	35 rats	Sprague-Dawley.	M	0.2% soln. in drinking water for 24 mos.	P.O	Tumors[5211]	3 died during experiment, 6 were sacrificed.	24 mos.
Ershoff, B. H., 1954	112 rats[5212]	Long Evans	M	0.25% in the diet for 42 d	P.O	0		6 wks.
	48 rats[5213]	Long Evans	M	0.25% in the diet for 42 d	P.O	0		6 wks.
	96 rats[5212]	Long Evans	M	0.1, 0.25 or 0.5% in the diet for 42 d	P.O	0	100%	6 wks.
Harkness, M. L. R., et al., 1954.	Rats	Albino	M	0.05% w/v in drinking water up to 50 d.	P.O	0[5214]	Killed at 3, 16, 12, 24, & 50 d. intervals.	50 d.

[5209] Virgins, age 3 mos.
[5210] Continued until death.
[5211] 56% with thyroid adenomas.
[5212] Age 21–24 days.
[5213] Age 21–23 days.
[5214] No pathology report. To be published elsewhere.

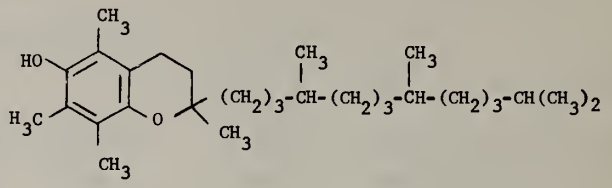
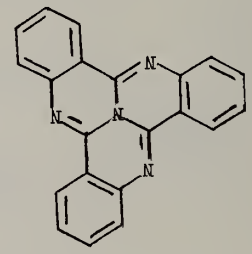
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
971. THIOURACIL (Continued)								
	Rats	Albino	M	0.05% w/v in drinking water for 30 d.	P.O	0[5214]	Some killed at 30, 37 & 60 d.	60 d.
Miller and Gardner, 1954	21 mice	(C57 x CBA F_1)F_1.	F	0.2% in the diet	P.O	Tumors[5215]		11 to 29 mos.
Nelson, A. A., et al., 1954	22 rats	Albino	M & F	0.05% in the diet[5216]	P.O	Tumors[5217]	117 wks	140 wks.
	17 rats	Albino	M & F	0.05% in the diet	P.O	0	Avg. 115 wks	126 wks.
Zeckwer, I. T., et al., 1954	Mice	Swiss	M	0.1% in drinking water	P.O	0[5218]	Killed at 60 to 90 d.	90 d.
	13 rats	Wistar	M	0.1% in the drinking water	P.O	0[5219]	Killed at 67 to 97 d.	97 d.
Casas, C. B., 1955[4979]	Mice[4770]	C3H	M & F	0.3% in diet for 10 mos	P.O	Tumors[5159]		10 mos.
	Mice[4770]	C3H	M & F	0.3% in diet for 10 mos. fed stock diet for 4–6 additional mos.	P.O	0		16 mos.
Deane, H. W., and Lyman, C. P., 1957.	7 hamsters			1% in drinking water, 0.2% in food	P.O	0[5220]	Killed from 1 wk.–2 mos.	2 mos.
Korpässy, et al., 1959	25 rats[5221]	White	F	10 mg. in 1 ml. dist. water from 15th d. following castration.	P.O. (stomach tube).	Tumors[5222, 5223]	18	2 yrs.
Stolk, A., 1959	30 fishes	Xiphophorus helleri Heckel x Xiphophorus maculatus.	F	2 g./kg. in normal diet	P.O	Tumors[5224, 5225]	30 at 190 d	190 d.

972. TIN PHTHALOCYANINE



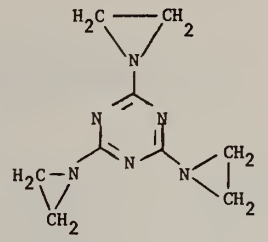
Haddow, A., and Horning, E.S., 1960.	20 mice	Stock		0.5 mg. wkly. for 34 wks	S.C	0	14 at 8 mos	8 mos. to date.

[4770] Castrated.
[4979] An abstract.
[5159] Hepatomas.
[5214] No pathology report. To be published ejsewhere.
[5215] 6 with hepatomas. Ovarian granulosa cell tumors in splenic ovarian graft occurred in this and other non-treated groups.
[5216] 2% cholesterol diet supplement.
[5217] 2 with hepatomas.
[5218] Thyroid hyperplasia.
[5219] Thyroid hyperplasia.
[5220] Thyroid hyperplasia and hypertrophy.
[5221] Castrated with ovarian tissue autotransplant into spleen.
[5222] 8 granulosa cell tumors (1 mixed, 3 luteoma).
[5223] 15/17 intrasplenic ovarian graft controls with graft tumors.
[5224] 100% with melanomas (avg. 5.2 tumors/fish). Avg. latent period 70–90 days.
[5225] 21/30 untreated controls with melanomas (avg. 3.1 tumors/fish). Avg. latent period 110–130 days.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
				973. α-TOCOPHEROL[5226] 				
Gillman, J., et al., 1954	5 rats	Wistar	M	1 mg./d. crushed to powder and incorporated in Coward's diet.[5227]	P.O	0	58–69 d	69 d.
	5 rats	Wistar	F	1 mg./d. crushed to powder and incorporated in Coward's diet.[5227]	P.O	0	70–74 d	74 d.
				974. TRICYCLOQUINAZOLINE 				
Baldwin, R. W., et al., 1958	30 rats	Wistar	M & F	10 mg./ml. as a susp. in olive oil for 4 mthly. injs. total dose 40 mg.	S.C	Tumors[5228]		30 mos.
Baldwin, R. W., et al., 1959	Rats	Wistar	M & F	10 mg./ml. in sterile olive oil susp. once mthly. for 4 mos. (total 40 mg./rat).	S.C., r. axilla	Tumors[5229]	30 at 12 mos., 8 at 26 mos.	26 mos.
	40 mice	Schofield	20 ♂♂	0.3 ml. of saturated soln. in benzene twice wkly. for 40 wks.	Skin	Tumors[5230, 5231]	36 survived experiment or developed tumors.	40 wks.

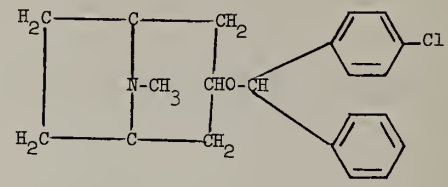
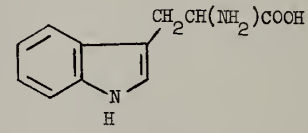
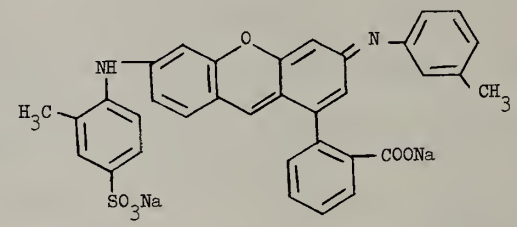
[5226] Vitamin E.
[5227] Coward's diet: 71% dextrinized corn starch, 15% casein, 10% brewers yeast, 4% salts.
[5228] 27% with injection site spindle cell sarcoma. Avg. latent period 16–24 mos.
[5229] 8 with sarcomas. Avg. latent period 16–26 mos.
[5230] 24/36 with squamous cell carcinomas. Some basal cell carcinomas (some developed outside treated area).
[5231] Benzene treated controls with 1 papilloma.

975. TRIETHYLENE MELAMINE

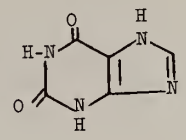
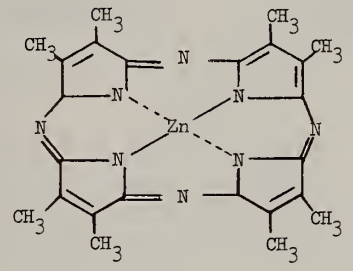
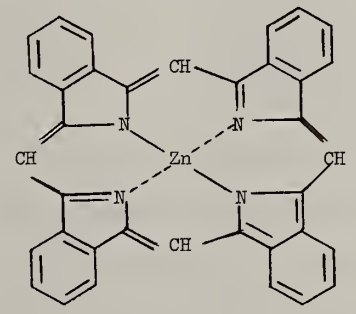


Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
Shimkin, M. B., 1954	30 mice	A	F[5232]	0.05 mg. in 0.1 cc. of water once or repeated once two wks. later. Total dose 0.05 or 0.01 mg.	I.P	Tumors[5232]	19 died	18 wks.
	30 mice[5234]	Strain A	F	0.05 mg. in 0.1 cc. of water once, repeated 2 wks. later, total of 0.1 mg.	I.P	Tumors[5235]		18 wks.
Friederici, L., 1955	2 rabbits (2.5–3.5 Kg. body wt.).		M & F	5–10 mg./kg	P.O	0	1 at 140th d	At least 140 d.
Roe and Salaman, 1955	24 mice	Stock Albino "S" strain.	M	0.3 ml. of 0.17% soln. in acetone, once. (Total dosage: 0.5 mg.[5235])	Skin	3 (7 skin tumors.)	All but 7 died after excessively high single dose.	21 wks.
	10 mice	Stock Albino "S" strain.	M	0.3 ml. of 0.08% soln. in acetone, once. (Total dosage: 0.24 mg.)	Skin	0	8 alive at close of experiment	
	10 mice	Stock Albino "S" strain.	M	0.3 ml. of 0.08% soln. in acetone, once (Total dosage: 0.24 mg.[5235]).	Skin	5 (18 skin tumors).	All alive at 21 wks.	Approx. 22 wks.
	10 mice	Stock Albino "S" strain.	M	0.3 ml. of 0.04% soln. in acetone, wkly. for 15 wks.(Total dosage: 1.8 mg.[5237]).	Skin	7 (22 skin tumors).	All alive at 18 wks.	At least 19 wks.
	10 mice	Stock Albino "S" strain.	M	0.3 ml. of 0.04% soln. in acetone, wkly. for 15 wks. (Total dosage: 1.8 mg.)	Skin	0	9 alive at close of experiment.	

[5232] Virgin.
[5233] 24 pulmonary tumors (2.64 tumors/mouse).
[5234] Virgin, age 3 mos.
[5235] 24 with pulmonary tumors (2.64 tumors/mouse).
[5236] 18 weekly applications of 0.3 ml. 0.5% croton oil in acetone begun 3 wks. after treatment.
[5237] 18 weekly applications of 0.3 ml. 0.5% croton oil in acetone alternated (3 to 4 day intervals) with treatment.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
976. TROPINE 4-CHLOROBENZHYDRYL ETHER HYDROCHLORIDE  • HCl								
Chen, J. Y. P., 1955[5238]	Dogs			1–20 mg./kg. daily for over 7 wks	P.O.	0[5239]		7 wks.
	Rats			1–20 mg./kg. daily for over 7 wks	P.O.	0[5239]		7 wks.
977. TRYPTOPHAN 								
MacDonald, R. A., 1959	6 rats	Sprague-Dawley.	M	8 mg. twice daily for 73 d	S.C.	0[5240]		73 d.
Knox, W. E., 1960	14 rats	Slonaker	F	1.4%[5241] in diet	P.O.	Tumors[5242]		320 d.
978. VIOLAMINE R[5243] 								
Umeda, M., 1956	20 rats	Wistar descent	M & F	1 cc. of 3 g/10 cc. dist. water once a wk., after about 4 mos. reduced to 1–2 times a mo., total of 960–1140 mg.	S.C. back	Tumors[5244]	10 survived 300 d. or more.	506 d.

[5238] From abstract.
[5239] Drug well tolerated; studies remain in progress.
[5240] Injection site dermal fibrosis.
[5241] DL isomer.
[5242] Approx. 2% with otic squamous cell carcinoma.
[5243] Color Index No. 758.
[5244] 1 with injection site fibroma and thymic hypertrophy. 2 hypophyseal adenomas (probably spontaneous). 5 with thymic hypertrophy.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
979. XANTHINE 								
Haddow, A., and Horning, E. S., 1960.	12 rats	Albino		50 mg. wkly. for 18 wks	S.C	Tumors[5245]	12 at 14 mos	14 mos. to date.
	20 mice	CBA		5 mg. wkly. for 28 wks	S.C	0	18 at 15 mos	15 mos. to date.
980. ZINC OCTAMETHYLTETRAZAPORPHYRIN 								
Haddow, A., and Horning, E. S., 1960.	20 mice	Stock		0.5 mg. wkly. for 7 wks	S.C	0	17 at 8 mos	8 mos. to date.
981. ZINC TETRABENZPORPHYRIN[5246] 								
Haddow, A., and Horning, E. S., 1960.	20 mice	Stock		0.5 mg. wkly. for 8 wks	S.C	0	18 at 9 mos	9 mos. to date.

[5245] 1 sarcoma.

[5246] Probably zinc tetrabenzporphin.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
982. ACTINOMYCIN L[6247]								
Kawamata, G.; Nakabayashi, N.; Kawai, A.; Fujita, H.; Imanishi, M., and Ikegami, R., Biken's J. *2*, 105–112 (1959).	40 mice	btk	M	9–250 mg. in saline, 2 times wkly	S.C	5 sarc.[6248]		1 yr.
983. ACTINOMYCIN S[6249]								
Kawamata, J.; Nakabayashi, N.; Kawai, A.; Fujita, H.; Imanishi, M., and Ikegami, R., Biken's J. *2*, 105–112 (1959).	210 mice	btk, ctk, Swiss albino, dd0, C3H, C57BL.	M & F	0.94–125 μg. in saline twice wkly	S.C	101 sarc.[6250]		1 yr.
985. ALUMINUM-DEXTRAN								
Haddow, A., and Horning, E. S., 1960.	20 mice	Stock		0.2 cc. wkly. for 14 wks	S.C	Tumors[6252]	13 at 14 mos	14 mos. to date.
986. ANISOMYCIN HYDROCHLORIDE								
Gardocki, J. F., et al., 1955	2 monkeys			64 mg./kg. 6 d./wk. for 32 wks	P.O. stomach tube.	0[6253]	1 died at 16th wk.	7 mos
	2 monkeys			16 mg./kg. 6 d./wk. for 32 wks	P.O. stomach tube.	0	1 killed at 29th wk.	7 mos.
	2 monkeys			4 mg./kg. 6 d./wk. for 32 wks	P.O. stomach tube.	0	All sacrificed at 7 mos.	7 mos.
	2 monkeys			2 mg./kg. 6 d./wk. for 32 wks	P.O. stomach tube.	0	All sacrificed at 32 wks.	32 wks.
	2 monkeys			1 mg./kg. 6 d./wk. for 32 wks	P.O. stomach tube.	0	All sacrificed at 32 wks.	32 wks.
	10 rats	Albino-Wistar	M	100 ppm. in diet for 33 wks	P.O	0	All sacrificed at 33 wks.	33 wks.
	10 rats	Albino-Wistar	M	50 ppm. in diet for 33 wks	P.O	0	All sacrificed at 33 wks.	33 wks.
	10 rats	Albino-Wistar	M	10 ppm. in diet for 33 wks	P.O	0	All sacrificed at 33 wks.	33 wks.

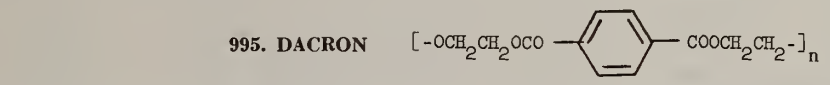
[6247] "Actinomycin 2104 L."
[6248] First at 35 wks.
[6249] "Actinomycin 1048 A."
[6250] First at 16 wks.
[6252] 3 injection site sarcomas, 1 benign histiocytoma.
[6253] Pronounced emesis and diarrhea.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
987. BACITRACIN METHYLENE DISALICYLATE								
Bridges, J. H., et al., 1954	7 pigs	Duroc	M	10 g./ton for 119 d. in milo-soybean oil meal ration.	P.O	0[5254]	1 died	119 d.
	7 pigs[5255]	Duroc	M	10 g./ton for 84 d. in milo-soybean oil meal ration.	P.O	0[5254]	1 died	84 d.
Radomski, J. L., et al., 1954	4 dogs			250 mg./kg. or 50 mg./kg. daily in capsules for 3 mos.	P.O	0	100%	3 mos.
	20 rats		M & F	0.5% or 0.1% in the diet for 3 mos	P.O	0		3 mos.
988. BISMUTH-DEXTRAN[5255]								
Haddow, A., and Horning, E. S., 1960.	20 mice	Stock		0.2 cc. wkly. for 23 wks	S.C	0	14 at 10 mos	10 mos. to date.
989. CARMINE								
Oka, K., et al., 1957	Rats			0.5 cc. of 1% soln. once/wk	Inj	0		Prolonged period.
Ooneda, G., et al., 1957	Rats		M & F	1% soln. in 2% Na_2CO_3 water once/wk.	S.C	0		365 d.
990. CELLOPHANE[5257]								
Oppenheimer, B. S., et al., 1953.	Rats			Film embedded under skin	S.C	Tumors[5258]		1–2 yrs.
	Rats			Film embedded under skin.[5250]	S.C	Tumors[5259]		1–2 yrs.
	Mice	Black		Film embedded under skin	S.C	Tumors[5261]		1–2 yrs.
	Mice			Film embedded under skin	S.C	Tumors[5262]		1–2 yrs.
	Rats			Film embedded under skin.[5263]	S.C	Tumors[5254]	16 still alive	Experiment in progress.
Laskin, D. M., et al., 1954	50 mice	Harlan		1 x 1 cm. sq. of film embedded	S.C. (abdominal wall).	1 fibrosarc.[5265].	7 at 400 d	At least 400 d.
Oppenheimer, et al., 1955	Rats	Wistar	M	1.5 cm. wide piece of 0.04 mm. thick plain film.	S.C., abdominal wall.	15 (35.7%) [5266].	42 at 495 d	At least 779 d.
	Rats	Wistar	M	Plain film, 1.5 cm. in width, 0.01 mm. in thickness.	S.C., abdominal wall.	3 (15.8%) [5265].	19 at 423 d	At least 521 d.

[5254] No hepatic or splenic tumors.
[5255] Antibiotic fed prior to experiment.
[5256] 0.5% Bi.
[5257] Commercial regenerated cellulose.
[5258] 15/42 (35.7%) with malignant tumors.
[5259] 20/44 (45.4%) with malignant tumors.
[5260] Extracted with methyl alcohol.
[5261] 1/22 with malignant tumor.
[5262] 8/35 (22.8%) with malignant tumors.
[5263] Extracted with alcohol and benzene.
[5264] 11 malignant tumors.
[5265] At 400 days. 1 mammary adenocarcinoma (probably spontaneous).
[5266] Predominately fibrosarcomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
990. CELLOPHANE (Continued)								
	Mice	C57	M	Plain film, 1.5 cm. in width, 0.04 mm. in thickness.	S.C., abdominal wall.	1 (4.5%) [6267].	22 at 269 d	
	Rats	Wistar	M	Plain film, 1.5 cm. in width, 0.04 mm. in thickness.	S.C., abdominal wall.	18 (46.1%) [5266].	39 at 390 d	At least 706 d.
	Mice	Albino (Longacre).	M	Plain film, 1.5 cm. in width, 0.04 mm. in thickness.	S.C., abdominal wall.	8 (22.8%) [5266].	35 at 245 d	At least 498 d.
	Rats	Wistar	M	Plain film, 1.5 cm. in width, 0.04 mm. in thickness.	S.C. implantation, abdominal wall.	20 (45.4%) [5266].	44 at 322 d	At least 665 d.
	Rats	Wistar	M	Perforated film, 1.5 cm. in width, 0.01 mm. in thickness.	S.C., abdominal wall.	4 (18.2%) [5266].	22 at 504 d	At least 594 d.
Kogan, A. Klr., and Chechulin, A. S., Patol. fiziol. eksper. terap., *1*, 39–44 (1957).	Rats			Film	Implantation around kidneys.	Sarc.[6251]	At least 8 mos	
Lacassagne, A., et al., 1957	Rats—17 (2.5 mos.).	Wistar	12 M, 5 F	Plates 7×7×0.1 mm	S.C	1 sarc	14 at 1 yr	2 yrs.
Kogan, A. Kh., and Tugarinova, V. N., 1959.	32 rats	White	M & F	Ground film—0.05×0.1 cm. and 0.1×0.2 cm. in size.	Implant near r. kidney.	0	6 between 10–15 mos.	15 mos.
991. CELLULOSE $(C_6H_{10}O_5)_n$								
Russell, F. E., et al., 1959	35 mice	Wistar	M & F	4 mm.×5 mm. and 0.16 mm. thick regenerated film.	S.C. implant	0	30 at 300 d	Up to 800 d.
992. CELLULOSE HYDRATE $(C_6H_{10}O_5)_n \cdot H_2O$								
Nothdurft, H., 1956	72 rats			17 mm. disc implanted (8 per rat)	S.C	59 sarc		23 mos.
	61 rats			17 mm. perforated disc, implanted (8 per rat).	S.C	44 sarc		23 mos.
Nothdurft, H., 1956	Rats			Tablet of compressed powder implanted (10 per animal).	S.C	1 sarc		25 mos.
993. CHROMIUM-DEXTRAN								
Haddow, A., and Horning, E. S., 1960.	20 mice	Stock		0.2 cc. wkly. for 24 wks	S.C	0	16 at 9 mos	9 mos. to date.

[6251] At 8 mos. No metastases; transplantable.
[6257] Commercial regenerated cellulose.
[6266] Predominately fibrosarcomas.
[6267] Fibrosarcoma.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
994. COPPER-DEXTRAN								
Haddow, A., and Horning, E. S., 1960.	20 mice	Stock		0.1 cc. of 1–4 dilution wkly. for 6 wks.	S.C	0	13 at 10 mos	10 mos. to date.
995. DACRON 								
Oppenheimer, et al., 1953	Rats			Perforated film embedded under skin.	S.C	Tumors[5268]	30 still alive	Experiment still in progress.
	Rats			Film embedded under skin	S.C	Tumors[5269]	29 still alive	Experiment still in progress.
Oppenheimer, et al., 1955	Rats	Wistar	M	Perforated film, 1.5 cm. in width, 0.02 mm. in thickness.	S.C., abdominal wall.	2(4.8%)[5268]	42 at 327 d	At least 651 d.
	30 rats	Wistar	M	Textile, 1.5 cm. in width, 0.05 mm. in thickness.	S.C., abdominal wall.	0		
	Rats	Wistar	M	Plain film, 1.5 cm. in width, 0.02 mm. in thickness.	S.C., abdominal wall.	8(19.5%)[5266].	41 at 330 d	At least 693 d.
996. DEXTRAN $(C_6H_{10}O_5)_n$								
Lusky, L. M., and Nelson, A. A., 1957.	20 rats	20 Osborne-Mendel, 10 Bethesda Black.	20 M, 10 F	1 cc. of 6% aqueous soln. wkly	S.C	0		73 wks.
Hueper, W. C., 1959	20 rats	Bethesda Black		500 mg. powder once.[5270]	I.P	Tumors[5271, 5272].	All survivors sacrificed.	2 yrs.
	3 rabbits	Dutch		1,750 mg., 7% aqueous soln., total dose 17,500–35,500 mg.[5270]	I.V	0	All survivors sacrificed.	Up to 4 yrs.
	40 mice	C57BL		200 mg. powder once.[5273]	S.C	Tumors[5274, 5275].	All survivors sacrificed.	2 yrs.
	30 mice	C57BL		200 mg. powder once.[5276]	S.C	Tumors[5275, 5277].	All survivors sacrificed.	2 yrs.

[5256] Predominately fibrosarcomas.
[5267] Fibrosarcoma.
[5268] 1 malignant tumor.
[5269] 3 malignant tumors.
[5270] Dextran 1; avg. molecular wt.: 200,000.
[5271] 1 nodal reticulum cell sarcoma, 2 mammary adenofibroma, 1 uterine carcinoma.
[5272] 200 controls with 11 reticulum cell sarcomas, 1 pulmonary adenoma, 3 mammary adenofibromas, 1 renal carcinoma, 4 uterine carcinomas, 1 ovarian carcinoma. Controls received various treatments. Survival rates not reported.
[5273] Dextran 2; avg. molecular wt.: 100,000.
[5274] 1 hepatic reticulum cell sarcoma.
[5275] 840 controls with 6 reticulum cell sarcomas. Controls received various treatment. Survivor rates not reported.
[5276] Dextran 4; avg. molecular wt.: 75,000.
[5277] 1 nodal reticulum cell sarcoma.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
996. DEXTRAN $(C_5H_{10}O_5)_n$ (Continued)								
	35 mice	C57BL		200 mg. powder once[5278]	S.C	Tumors[5275, 5279]	All survivors sacrificed.	2 yrs.
	3 rabbits	Dutch		1,750 mg., 7% aqueous soln., total dose 17,500–35,500 mg.[5273]	I.V	0	All survivors sacrificed.	Up to 4 yrs.
	20 rats	Bethesda Black		500 mg. powder once.[5273]	I.P	Tumors[5280, 5281]	All survivors sacrificed.	2 yrs.
	20 rats	Bethesda Black		500 mg. powder once.[5273]	S.C	Tumors[5281, 5282]	All survivors sacrificed.	2 yrs.
	20 mice	C57BL		200 mg. powder once.[5273]	I.P	Tumors[5275, 5283]	All survivors sacrificed.	2 yrs.
	28 mice	C57BL		200 mg. powder once.[5284]	S.C	Tumors[5275, 5285]	All survivors sacrificed.	2 yrs.
	13 mice	C57BL		200 mg. powder once.[5286]	S.C	0[5275]	All survivors sacrificed.	2 yrs.
	9 mice	C57BL		200 mg. powder once.[5287]	S.C	Tumors[5275, 5277]	All survivors sacrificed.	2 yrs.
	20 mice	C57BL		200 mg. powder once.[5293]	I.P	Tumors[5289, 5275]	All survivors sacrificed.	2 yrs.
	40 mice	C57BL		200 mg. powder once.[5293]	S.C	Tumors[5289, 5275]	All survivors sacrificed.	2 yrs.
	20 rats	Bethesda Black		500 mg. powder once.[5288]	S.C	Tumors[5281, 5290]	All survivors sacrificed.	2 yrs.
	40 mice	C57BL		200 mg. powder once.[5270]	S.C	Tumors[5275, 5291]	All survivors sacrificed.	2 yrs.
	20 mice	C57BL		200 mg. powder once.[5270]	I.P	Tumors[5289, 5275]	All survivors sacrificed.	2 yrs.
	20 rats	Bethesda Black		500 mg. powder once.[5270]	S.C	Tumors[5281, 5292]	All survivors sacrificed.	2 yrs.
	3 rabbits	Dutch		1,750 mg. 7% aqueous soln., total dose 17,500–35,500 mg.[5293]	I.V	0	All survivors	Up to 4 yrs.
	40 mice	C57BL		200 mg. powder once.[5294]	S.C	Tumors[5275, 5277]	All survivors sacrificed.	2 yrs.

[5273] Dextran 2_8 avg. molecular wt.: 100,000.
[5275] 840 controls with 6 reticulum cell sarcomas. Controls received various treatment Survivor rates not reported.
[5277] 1 nodal reticulum cell sarcoma.
[5278] Dextran 3; avg. molecular wt.: "several million."
[5279] 1 lymphoma. 1 pulmonary adenoma.
[5280] 1 hepatic cholangioma, 2 hepatic reticulum cell sarcomas, 1 uterine carcinoma.
[5281] 200 controls with 11 reticulum cell sarcomas, 1 pulmonary adenoma, 3 mammary adenofibromas, 1 renal carcinoma, 4 uterine carcinomas, 1 ovarian carcinoma. Controls received various treatments. Survival rates not reported.
[5282] 1 nodal reticulum cell sarcoma, 1 cardiac mesothelioma, 1 mammary adenofibroma.
[5283] 4 hepatic reticulum cell sarcomas, 2 pulmonary adenomas.
[5284] Dextran 5. Highly bronchial.
[5285] 3 nodal reticulum cell sarcomas.
[5286] Dextran 6. Highly bronchial.
[5287] Dextran 7. Highly bronchial.
[5288] Dextran 8; avg. molecular wt.: 37,500.
[5289] 1 lymphoma.
[5290] 1 hepatic cholangioma, 1 hepatic leukemia. 1 mammary adenofibroma, 1 uterine carcinoma.
[5291] 1 lymphoma, 1 leukemia. 2 hepatic reticulum cell sarcomas.
[5292] 2 nodal reticulum cell sarcomas, 1 hepatic reticulum cell sarcoma, 2 mammary adenofibromas, 2 uterine carcinomas.
[5293] Dextran 8; avg. molecular wt.: 37,000.
[5294] Dextran 9; avg. molecular wt.: 300,000.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
996. DEXTRAN $(C_6H_{10}O_5)_n$ (Continued)								
	20 rats	Bethesda Black		500 mg. powder once.[5294]	S.C	Tumors[5281, 5295]	All survivors sacrificed.	2 yrs.
	20 rats	Bethesda Black		300 mg. powder once.[5294]	I.P	Tumors[5281, 5295]	All survivors sacrificed.	2 yrs.
	3 rabbits	Dutch		1750 mg. 7% aqueous soln. Total dose 17,500–35,500 mg.[5294]	I.V	0	All survivors sacrificed.	Up to 4 yrs.
	20 mice	C57BL		200 mg. powder once.[5294]	I.P	Tumors[5275, 5297]	All survivors sacrificed.	2 yrs.
	40 mice	C57BL		200 mg. powder once.[5298]	S.C	Tumors[5275, 5299]	All survivors sacrificed.	2 yrs.
	20 mice	C57BL		200 mg. powder once.[5298]	I.P	Tumors[5300, 5275]	All survivors sacrificed.	2 yrs.
	20 rats	Bethesda Black		500 mg. powder once.[5298]	S.C	Tumors[5281, 5301]	All survivors sacrificed.	2 yrs.
Hueper, W. C., 1959	20 rats	Bethesda Black.		500 mg. powder once.[5298]	I.P	Tumors[5281, 5302]	All survivors sacrificed.	2 yrs.
	3 rabbits	Dutch		1,750 mg. 7% aqueous soln. total dose 17,500–35,500 mg.[5298]	I.V	Tumors[5303]	All survivors sacrificed.	Up to 4 yrs.
	40 mice	C57BL		200 mg. powder once.[5304]	S.C	Tumors[5305, 5275]	All survivors sacrificed.	2 yrs.
	20 mice	C57BL		200 mg. powder once.[5304]	I.P	0[5275]	All survivors sacrificed.	2 yrs.
	20 rats	Bethesda Black.		500 mg. powder once.[5304]	S.C	Tumors[5281, 5306]	All survivors sacrificed.	2 yrs.
	20 rats	Bethesda Black.		500 mg. powder once.[5304]	I.P	Tumors[5281, 5307]	All survivors sacrificed.	2 yrs.
	3 rabbits	Dutch		1,750 mg., 7% aqueous soln. Total dose 17,500–35,500 mg.[5304]	I.V	Tumors[5308]	All survivors sacrificed.	Up to 4 yrs.
Richmond, H. G., 1959	12 rats	Hooded	M	0.5 ml. once wkly	I.M	0		
	12 rats	Hooded	6 āā	0.1 ml. up to 0.4 ml. twice wkly. up to 3 mos.	I.M	0		11 mos.

[5275] 840 controls with 6 reticulum cell sarcomas. Controls received various treatment. Survivor rates not reported.

[5281] 200 controls with 11 reticulum cell sarcomas, 1 pulmonary adenoma, 3 mammary adenofibromas, 1 renal carcinoma, 4 uterine carcinomas, 1 ovarian carcinoma. Controls received various treatments. Survival rates not reported.

[5294] Dextran 9; avg. molecular wt.: 300,000.

[5295] 2 uterine carcinomas, 1 ovarian cystadenoma.

[5296] 2 nodal reticulum cell sarcoma, 2 hepatic reticulum cell sarcomas, 1 uterine carcinoma.

[5297] 1 lymphoma, 1 leukemia.

[5298] Dextran 10; avg. molecular wt.: 89,400.

[5299] 1 lymphoma, 2 hepatic reticulum cell sarcomas.

[5300] 4 hepatic reticulum cell sarcomas.

[5301] 1 nodal reticulum cell sarcoma. 1 hepatic cholangioma, 3 hepatic reticulum cell sarcomas, 1 mammary adenofibroma, 1 renal carcinoma, 1 uterine carcinoma.

[5302] 1 hepatic cholangioma, 2 hepatic reticulum cell sarcomas, 1 uterine carcinoma.

[5303] 1 lymphoma, 1 leukemia.

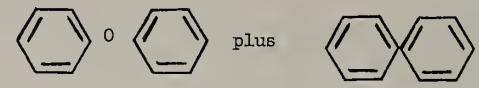
[5304] Dextran 11; avg. molecular wt.: 71,400.

[5305] 2 hepatic reticulum cell sarcomas, 1 leukemia.

[5306] 1 hepatic reticulum cell sarcoma, 1 uterine sarcoma.

[5307] 2 nodal reticulum cell sarcomas, 1 mammary adenofibroma, 1 uterine carcinoma.

[5308] 2 pulmonary adenomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
				997. DOWTHERM A[5309] 				
Pecchiai, L., and Saffiotti, U., 1957.	8 rats	Albino	M	0.1 ml. daily in the diet	P.O	0		Up to 13 mos.
	17 rats	Albino	M	1, 3, or 5 ml. once	P.O. (stomach tube).	0		Up to 7 mos.
				998. EPON 562[5310]				
Hine, C. H., et al., 1958	20 rats[5311]	Long-Evans	M	1.0 and 0.04% mixed in feed, fed for 26 wks.	P.O	0	100%	26 wks.
	10 rats	Long-Evans	M	0.2% mixed in feed, fed for 26 wks	P.O	0	1 died	26 wks.
	10 rats		M	Exposed to air saturated with vapor 7 hrs./d., 5 d./wk., for total of 50 exposures.	Inhalation	0	100%	10 wks.
				999. EPON 828[5310]				
Hine, C. H., et al., 1958	20 rats[5311]	Long-Evans	M	1.0 and 0.2% mixed in feed, fed for 26 wks.	P.O	0	100%	26 wks.
				1000. EPON 1001[5310]				
Hine, C. H., et al., 1958	10 rats	Long-Evans	M	0.2% mixed in feed, fed for 26 wks	P.O	0	1 died	26 wks.
	20 rats[5311]	Long-Evans	M	1.0 and 5.0% mixed in feed, fed for 26 wks.	P.O	0	100%	26 wks.
				1001. EPON 1007[5310]				
Hine, C. H., et al., 1958	10 rats	Long-Evans	M	0.2% mixed in feed, fed for 26 wks	P.O	0	1 died	26 wks.
	20 rats[5311]	Long-Evans	M	1.0 and 5.0% mixed in feed, fed for 26 wks.	P.O	0	100%	26 wks.
				1002. ETHYLCELLULOSE				
Hueper, W. C., 1959	25 rats	Bethesda Black		500 mg. powder once	S.C	Tumors[5281, 5312].	All survivors sacrificed.	2 yrs.

[5281] 200 controls with 11 reticulum cell sarcomas, 1 pulmonary adenoma, 3 mammary adenofibromas, 1 renal carcinoma, 4 uterine carcinomas, 1 ovarian carcinoma. Controls received various treatments. Survival rates not reported.

[5309] Mixture of diphenyl ether and diphenyl: oxydiphenyl.

[5310] Proprietary uncured resin product (Shell Chemical Corp.).

[5311] 10/group.

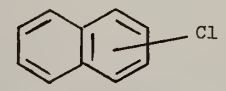
[5312] 1 pulmonary adenoma, 2 uterine carcinomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
1003. FERRITIN[5313]								
Haddow, A., and Horning, E. S., 1960.	20 rats	Albino		20 mg. wkly. for 10 wks	S.C	0	20 at 7 mos	7 mos. to date.
	20 mice	Stock		5 mg. wkly. for 15 wks	S.C	0	12 at 7 mos	7 mos. to date.
1004. FERRIVENIN[5314] $C_{12}H_{22}O_{11}(Fe_2O_3)_2$								
Richmond, H. G., 1959	12 rats	Hooded	M	0.5 ml. (10 mg. iron) once wkly. over 17 mos.	I.M	0		At least 17 mos.
Haddow, A., and Horning, E. S., 1960.	20 mice	Stock		0.2 cc. wkly. for 13 wks	S.C	Tumors[5315]	11 at 14 mos	14 mos. to date.
1005. HYDROXYPROPYL METHYL CELLULOSE[5315]								
McCollister, D. D., and Oyen, F., 1954.	20 rats	Wistar	10 M, 10 F	30% in stock diet for 121 d	P.O	0[5317]	6 M & 4 F rats at 121 d.	121 d.
	20 rats	Wistar	10 M, 10 F	10% in stock diet for 121 d	P.O	0[5317]		121 d.
	20 rats	Wistar	10 M, 10 F	3% in stock diet for 121 d	P.O	0[5317]		121 d.
	20 rats	Wistar	10 M, 10 F	1% in stock diet for 121 d	P.O	0[5317]		121 d.
1006. IRON-DEXTRAN								
Goldberg, L., et al., 1957	12 rats	Albino	6 M & F	Soln. containing 25 mg. Fe/kg. twice wkly. for total of 12 injs.	I.M. hind limbs.	0[5318]	7–49 wks	49 wks.
	12 rats	Albino	6 M & F	Soln. containing 25 mg. Fe/kg. twice wkly. for total of 24 injs.	I.M. hind limbs.	0[5318]	12–48 wks	48 wks.
	13 rats	Albino	M & F	Soln. containing 25 mg. Fe/kg. twice wkly. for total of 36 injs.	I.M. hind limbs.	0[5318]	18–55 wks	55 wks.
	12 rats	Albino	6 M & F	Soln. containing 75 mg. Fe/kg. thrice wkly. for total of 12 injs.	I.M. hind limbs.	0[5318]	4–50 wks	50 wks.
	38 rats	Albino	19 M & F	Soln. containing 75 mg. Fe/kg. thrice wkly. for total of 22 injs.	I.M. hind limbs.	0[5318]	9–60 wks	90 wks.
	26 rabbits		13 M & F	Soln. containing 75 mg. Fe/kg. thrice wkly. for total of 11 injs.	I.M. hind limbs.	0[5318]	2–59 wks	59 wks.
Richmond, H. G., 1959	40 rats	Hooded	20 āā	0.1 ml. up to 100 g., 0.2 ml. up to 150 g., 0.3 ml. up to 200 g., & 0.4 ml. twice wkly. thereafter, up to 3 mos., total 9.5 ml.[5319]	I.M	Tumors[5320, 5321]		11 mos.
	40 rats	Hooded	M	0.4 ml. (20 mg. iron) once wkly.[5319]	I.M	Tumors[5321, 5322]	17 killed in early mos.	16 mos.

[5313] A protein.
[5314] Saccharated oxide of iron containing ferric saccharate.
[5315] 2 spindle cell sarcomas, 3 histiocytomas.
[5315] Commercial product: Methocel 2602 with 6–7% hydroxypropyl substitution.
[5317] Negative pathology.
[5318] Renal lesions and testicular interstitial cell hyperplasia.
[5319] "Imferon".
[5320] 10 females, 12 males, with injection site spindle cell sarcoma or pleomorphic sarcomas at 9–11 mos.
[5321] 12 dextran controls negative.
[5322] 16/23 with injection site spindle cell sarcoma or pleomorphic sarcoma at 11–16 mos.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
1006. IRON-DEXTRAN (Continued)								
Haddow, A., and Horning, E. S., 1960.	30 mice	Stock		0.2 cc. of 20% w/v wkly. for 16 mos.[5319]	S.C. r. flank	0	12 at 16 mos	16 mos.
	6 rabbits			2 cc. wkly. for 28 wks.[5319]	I.M	0		16 mos.
	10 guinea pigs.			1 cc. wkly. for 7 mos.[5319]	S.C. r. flank	0	3 at 1 yr	1 yr.
	8 guinea pigs			1 cc. wkly. for 7 mos.[5319]	S.C. r. flank	0	5 at 1 yr	1 yr.
	32 hamsters	Chinese		0.1 cc. and 0.3 cc. wkly. for 4 and 7 mos.[5319]	S.C. r. flank	Tumors[5323]	High mortality	7 mos.
	30 hamsters	Cream	M	0.5 cc. wkly. for 10 wks.[5319]	S.C. r. flank	0		
	20 hamsters	Cream	M	0.5 cc. wkly. for 10 wks.[5319]	S.C. r. flank	Tumors[5324]		At least 9 mos.
	20 mice			0.3 cc. force-fed wkly. for 8 mos.[5319]	P.O	0		At least 8 mos.
	20 rats		M	1 cc. force-fed wkly. for 8 mos.[5319]	P.O	0[5325]		At least 8 mos.
	30 rats	Chester Beatty Albino.	M	1 cc. wkly. for 6 mos.[5319]	S.C. r. flank	Tumors[5326]	100% at 6 mos	At least 6 mos.
	20 mice			0.2 cc. wkly. for over 7½ mos.[5319]	S.C. r. flank	Tumors[5327]	13 at 8 mos	At least 8 mos.
	20 mice			0.2 cc. wkly. for 11 wks.[5319]	S.C. r. flank	Tumors[5328]	7 at 1 yr	1 yr.
	30 mice			0.3 cc. wkly. for 7 mos.[5319]	S.C. r. flank	Tumors[5329]	23 at 6 mos	At least 11 mos.
	25 mice			0.2 cc. wkly. for 13 wks.[5319]	S.C. r. flank	Tumors[5330]	14 at 1 yr	18 mos.
	20 mice	Stock		0.2 cc. of 20% w/v wkly. for 11 mos.[5319]	S.C. r. flank	0	16 at 11 mos	11 mos.
	Mice			0.05 cc. wkly. up to 8 mos.[5319]	S.C	Tumors[5331]		8 mos. to date.
1007. KEL-F[5332] $[—CF_2—CFCl—]_x$								
Oppenheimer, et al., 1955	Rats	Wistar	M	Plain film, 1.5 cm. in width, 0.02 mm. in thickness.	S.C. abdominal wall.	7(23.3%)[5333]	30 at 259 d	At least 581 d.
1008. LEAD NAPHTHENATE								
Rockhold, W. T., 1955	20 rats		M	0.25 ml. of 1% (as lead) soln. in peanut oil, 20 daily doses.	P.O	0		30 d.

[5319] "Imferon".
[5323] 1 injection site sarcoma, cholangiomas and hepatomas.
[5324] 1 sarcoma at 9 mos.
[5325] 1 mammary adenocarcinoma; possible relationship.
[5326] 19 sarcomas or fibrosarcomas. 5 histiocytomas.
[5327] Injection site tumors: 5 sarcomas, 3 histiocytomas. Latent period 5–7 mos.
[5328] 8 sarcomas or fibrosarcomas at 9–11 mos. 1 fibroma at 11 mos. 1 intraabdominal lymphosarcoma at 10 mos.
[5329] 18 with injection site spindle cell sarcomas at 6–11 mos. 3 histiocytomas. 1 hepatoma and hemangioma.
[5330] 9 with injection site spindle cell sarcoma. (with secondary tumor). 1 bronchogenic carcinoma.
[5331] 1 injection site sarcoma.
[5332] A plastic.
[5333] Predominately fibrosarcomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
1009. MAGNAMYCIN[6334]								
Nelson, A. A., and Radomski, J. L., 1954.	4 dogs[6335]	Mongrel		250 mg./kg. capsule/d., 6 d./wk. for 99 d.	P.O	0[6336]	100%	99 d.
1010. METHYLCELLULOSE								
Hueper, W. C., 1959	25 rats	Bethesda black		500 mg. powder once.[6337]	S.C	Tumors[6338, 6339].	All survivors sacrificed.	2 yrs.
1011. NAPHTHALENE, CHLORINATED[6340] 								
Brock, W. E., et al., 1957	5 ewes		F	0.5 mg. in 10% soln. in corn oil per lb. of body wt./d. in gelatin capsule, up to 135 d.	P.O	0[6341]		135 d.
	5 ewes		F	5.0 mg. in 10% soln. in corn oil per lb. of body wt./d. in gelatin capsule, up to 35 d.	P.O	0[6342]		35 d.
1012. NYLON $[—CO(CH_2)_4CONH—(CH_2)_6NH]_n$								
Oppenheimer, B. S., et al., 1953.	Rats			Film embedded under skin	S.C	Tumors[6343]	21 still alive	At least 441 d.
Oppenheimer, et al., 1955	33 rats	Wistar	M	Textile, 1.5 cm. in width, 0.08 mm. in thickness.	S.C., abdominal wall.	0		
	Rats	Wistar	M	Perforated film, 1.5 cm. in width, 0.06 mm. in thickness.	S.C., abdominal wall.	2(6.5%)[6344]	31 at 511 d	At least 738 d.
	Rats	Wistar	M	Plain film, 1.5 cm. in width, 0.06 mm. in thickness.	S.C., abdominal wall.	7(27.0%)[6345].	26 at 441 d	At least 651 d.
	Rats	Wistar	M	Textile, 1.5 cm. in width, 0.15 mm. in thickness.	S.C., abdominal wall.	1(2.5%)[6344]	40 at 497 d	
1013. ORCHIL $C_{28}H_{24}O_7N_2$								
Truhaut, unpublished data[6346]	40 rats			0.5% for 420 d	P.O	0	20 died	At least 420 d.
	50 rats			1% in food for 600 d	P.O	0		At least 600 d.

[6334] "Carbomycin".
[6335] Age: 2–5 yrs.
[6336] Cholecystic epithelial proliferation.
[6337] Avg. molecular wt.: 140,000.
[6338] 1 uterine carcinoma.
[6339] 200 controls with 11 reticulum cell sarcomas, 1 pulmonary adenoma, 3 mammary adenofibromas, 1 renal carcinoma, 4 uterine carcinomas, 1 ovarian carcinoma. Controls received various treatments. Survival rates not reported.
[6340] Halowax 1014.
[6341] Hepatic necrosis and cirrhosis.
[6342] Hepatic cirrhosis; cardiovascular lesions.
[6343] 1 injection site reticulum cell sarcoma, 3 injection site sarcomas.
[6344] Fibrosarcomas.
[6345] Predominately fibrosarcomas.
[6346] Recorded in "Toxikologische Daten . . . etc.", 6:1957.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
1014. PARAFFIN								
Berenblum and Haran, 1955	30 mice	Swiss	M	0.3 ml. of liquid paraffin in PEG solvent, once.[5347,5348]	P.O. by stomach tube.	4 papillomas of the forestomach.	27 at 10 wks	30 wks.
1015. PLIOFILM								
Oppenheimer, et al., 1955	Rats	Wistar	M	Plain film, 1.5 cm. in width, 0.01 mm. in thickness.	S.C., abdominal wall.	8(15%)[5345]	46 at 359 d	At least 708 d.
1016. POLYAMIDE[5349] $\ldots\text{—CO[NH—(CH}_2\text{)}_5\text{·CO]}_x\text{—NH—}\ldots$								
Schubert, G., and Uhlmann, G., 1955.	Rats	BD I, BD III	M & F	10 Supramid fibers 1 cm. long	S.C	Tumors[5350]		25–32 mos.
	Rats	BD I, BD III	M & F	10 Perlon fibers 1 cm. long	S.C	0		25–32 mos.
	Rats	BD I, BD III	M & F	5 Supramid square sheet	I.P	0[5351]		25–32 mos.
Reiter, A., 1957	27 rats (100 d. old).	BD I, BD III	M & F	150 mg. fibers.[5352]	I.P. & S.C	0[5353]	Avg. 510 d	700 d.
	27 rats (100 d. old).	BD I, BD III	M & F	150 mg. fibers.[5352]	I.P. & S.C	0[5353]	Avg. 510 d	700 d.
1017. POLYOXYETHYLENE-1,4-SORBITAN DISTEARATE								
Setälä, K., et al., 1959	Mice	White	M	0.18 mole. dispersion in 100% Carbowax 400, 6 times wkly. for duration of experiment.	Skin	0[5354,5355]		Up to 30 d.
1018. POLYOXYETHYLENE SORBITAN TRIOLEATE[5356]								
Setälä, H., 1956	50 mice	White	M	100% soln. once daily, 6 d./wk. for 52 wks.	Skin	Tumors[5357]	40 at 27 wks.	52 wks.
Setälä, K., et al., 1957	50 mice	Albino	M	100% 6 times/wk	Skin	0		24 wks.
1019. POLYOXYETHYLENE-1,4-SORBITAN TRISTEARATE								
Setälä, K., et al., 1959	Mice	White	M	0.18 mole. dispersion in 100% Carbowax 400, 6 times wkly. for duration of experiment.	Skin	0[5355,5358]		Up to 30 d.

[5345] Predominately fibrosarcomas.
[5347] 30 weekly doses (0.3 ml.) of 3% croton oil in liquid paraffin begun after treatment completed.
[5348] Milk only for 3 days; water only for 18 hrs. before treatment. Water only for 18 hrs. before each secondary treatment.
[5349] From polycondensation of caprolactam.
[5350] 1 spindle cell sarcoma.
[5351] Uterine carcinoma (spontaneous).
[5352] Synthetic fiber: "Perlon".
[5353] 1 mammary fibroadenoma. 1.5% spontaneous tumors reported for these strains.
[5354] Interfallicular epidermal hyperplasia.
[5355] Carbowax 400 controls normal.
[5356] Tween 85.
[5357] 1/1 benign dermal tumor at 27 wks.
[5358] Interfallicular epidermal hyperplasia.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
1020. POLYOXYETHYLENE SORBITOL TETRAOLEATE								
Setälä, H., 1956	50 mice	White	M	100% soln.[6359] once daily, 6 d./wk. for 52 wks.	Skin	0	22 at 52 wks	52 wks.
Setälä, K., et al., 1957	50 mice	Albino	M	100% 6 times a wk.[6359]	Skin	0		24 wks.
1022. POLYVINYL RESIN								
Nothdurft, H., 1956	95 rats			17 mm. disc implanted (8 per rat)	S.C	75 sarcomas		23 mos.
	Rats			Tablet of compressed powder, implanted (10 per animal).	S.C	0		25 mos.
	76 rats			17 mm. perforated disc implanted (8 per rat).	S.C	33 sarcomas.		23 mos.
1023. PODOPHYLLIN								
Roe and Salaman, 1955	20 mice	Stock albino "S" strain.	M	0.3 ml. of 0.1% soln. in acetone, wkly. for 15 wks. (Total dose: 4.5 mg.[5361])	Skin	0	19 at 18 wks	At least 19 wks.
1024. POLYSTYRENE								
Oppenheimer, et al., 1953	Rats			Film embedded under skin	S.C	Tumors[6362]	22 still alive	Experiment still in progress.
Oppenheimer, et al., 1955	Rats	Wistar	M	Plain film, 1.5 cm. in width, 0.01 mm. in thickness.	S.C., abdominal wall.	7(25.9%)[5346].	27 at 359 d	At least 556 d.
Nothdurft, H., 1956	40 rats			Rod implanted	S.C	15 sarc		23 mos.
	Rats			Tablet of compressed powder[6363] (10 per animal).	S.C	0		25 mos.
	51 rats			17 mm. perforated disc[6363] implanted (8 per rat).	S.C	25 sarc		23 mos.
	47 rats			17 mm. disc[6363] implanted (8 per rat).	S.C	37 sarc		23 mos.
Oppenheimer, B. S., et al., 1958.	Rats			2 films, 1.5 cm. wide x 0.01 mm. thick.	S.C	Tumors[6364]	294 at about 1 yr	Over 2 yrs.
	Rats			2 films, 1.5 cm. wide x 0.01 mm. thick.[6365]	S.C	Tumors[6366]		Up to 1 yr. 7 mos.
	Rats			2 films, 1.5 cm. wide x 0.01 mm. thick.[6367]	S.C	0		Up to 2 yrs.

[6346] Predominately fibrosarcomas.
[6359] G-2854.
[5360] A plastic: "Ivalon".
[5361] 18 weekly applications of 0.3 ml. 0.5% croton oil in acetone alternated (3 to 4 day intervals) with treatment.
[6362] 2 malignant tumors.
[6363] "Polystyrene resin".
[6364] 17 (6%) with sarcomas. Low incidence due to accidental premature deaths.
[6365] Films removed at 1 mo. intervals, from 3–12 mos.
[6366] 16% sarcomas in animals embedded 6–7 mos.; latent period 370 days. 16% sarcomas in animals embedded 7–8 mos.; latent period 275 days. 4.0% sarcomas in animals embedded 8–9 mos.; latent period 171 days. 2.8% sarcomas in animals embedded 9–10 mos.; latent period 101 days. 3% sarcomas in animals embedded 10–11 mos.; latent period 117 days. 14.7% sarcomas in animals embedded 11–12 mos.; latent period 102 days.
[6367] Films and pockets removed at 1 mo. intervals from 1–12 mos.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
1025. SARAN[5332] $[—CCl_2—CH_2—CHCl—CH_2—]_x$								
Oppenheimer, et al., 1955	Rats	Wistar	M	Plain film, 1.5 cm. in width, 0.02 mm. in thickness.	S.C., abdominal wall.	5(11.9%)[5345]	42 at 390 d	At least 847 d.
1026. SILASTIC $[—(CH_3)_2SiO—]_x$								
Oppenheimer, B. S., et al., 1953.	Rats			Embedded under skin	S.C	Tumors[5368]	3 still alive	Experiment still in progress.
Oppenheimer, et al., 1955	Rats	Wistar	M	Plain film, 1.5 cm. in width, 0.25 mm. in thickness.	S.C., abdominal wall.	14(40%)[5345]	35 at 300 d	At least 609 d.
Russell, F. E., et al., 1959	25 mice	Wistar	M & F	4 mm. x 5 mm. x 0.16 mm. thick disc.[5369]	S.C. implant	Tumors[5370]	20 at 300 d	Up to 800 d.
	25 mice	Wistar	M & F	4 mm. x 5 mm. x 0.16 mm. disc.[5371]	S.C. implant	0	22 at 300 d	Up to 800 d.
	25 mice	Wistar	M & F	4 mm. x 5 mm. x 0.16 mm. disc.[5372]	S.C. implant	0	23 at 300 d	Up to 800 d.
	25 mice	Wistar	M & F	4 mm. x 5 mm. x 0.16 mm. disc.[5373]	S.C. implant	Tumors[5374]	25 at 300 d	Up to 800 d.
	30 mice	Wistar	M & F	4 mm. x 5 mm. x 0.16 mm. disc.[5376]	S.C implant	0	24 at 300 d	Up to 800 d.
1027. SOLUBLE STARCH $(C_6H_{10}O_5)_n$								
Hueper, W. C., 1959	30 rats	Wistar		500 mg. 45% aqueous soln. once	I.P	Tumors[5376, 5377]	All survivors sacrificed.	2 yrs.
	30 rats	Wistar		500 mg. 45% aqueous soln., once	S.C	Tumors[5377, 5378]	All surviviors sacrificed.	2 yrs.
1028. 1,4-SORBITAN DISTEARATE								
Setälä, K., et al., 1959	Mice	White	M	0.18 mole. dispersion in 100% Carbowax 400, 6 times wkly. for duration of experiment.	Skin	0[5355, 5378]		Up to 30 d.
1029. 1,4-SORBITAN MONOSTEARATE								
Setälä, K., et al., 1959	Mice	White	M	0.18 mole. dispersion in 100% Carbowax 400, 6 times wkly. for duration of experiment.	Skin	0[5355, 5378]		Up to 30 d.

[5332] A plastic.
[5345] Predominately fibrosarcomas.
[5355] Carbowax 400 controls normal.
[5368] 12 malignant tumors.
[5369] Silastic 250.
[5370] 1 injection site spindle cell sarcoma at 583 days.
[5371] Silastic 450.
[5372] Silastic 675.
[5373] Silastic 2000.
[5374] 1 implant site rhabdomyosarcoma at 562 days.
[5375] Silastic 9711.
[5376] 1 nodal reticulum sarcoma, 1 mammary adenofibroma, 1 ovarian carcinoma, 1 adrenal adenoma.
[5377] 200 controls with 11 reticulum cell sarcomas, 1 pulmonary adenoma, 3 mammary adenofibromas, 1 renal carcinoma, 4 uterine carcinomas, 1 ovarian carcinoma. Controls received various treatments. Survival rates not reported.
[5378] Interfallicular epidermal hyperplasia.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
1030. SORBITAN TRIOLEATE[5379]								
Setälä, H., 1956	50 mice	White	M	100% soln. once daily, 6 d./wk. for 52 wks.	Skin	Tumors[5380]	46 at 19 wks	52 wks.
Setälä, K., et al., 1957	50 mice	Albino	M	100% soln. 6 times a wk	Skin	Tumors[5381]	Survival 46/50 at 24 wks.	
1031. 1,4-SORBITAN TRISTEARATE								
Setälä, K., et al., 1959	Mice	White	M	0.18 mole. dispersion in 100% Carbowax 400, 6 times wkly. for duration of experiment.	Skin	0[5355,5378]		Up to 30 d.
1032. SPIRAMYCIN $C_{22-24}H_{34-44}NO_{7-8}$								
Boyd, E. M., et al., 1958	10 dogs	Mongrel	M & F	0.5 g./kg. body wt. in capsule for 56 d.	P.O	0[5382]	2 died at 19 d., 1 at 27, 29, 30, 33, 41 and 46 d. respectively.	8 wks.
Boyd, E. M., and Brown, T. M. D., 1958.	10 rats	Albino-originally Wistar.	M	0.2 g./kg.[5383] as 4.00% soln. in dist. water, 7 d./wk. for 8–10 wks.	S.C	0	100%	10 wks.
1033. TANNIC ACID								
Korpassy, B., and Mosonyi, M., 1953.	40 rats	White	17 M, 23 F	150 mg. every 5th d., 48th d. on 200 mg., 87th d. on 225 mg., and 128th d. on 200 mg./kg. body wt. as aqueous soln.[5384]	S.C	Tumors[5385]	7 at 280 d	360 d.
	40 rats	White	17 M, 23 F	150 mg. every 5th d., 48th d. on 200 mg., 87th d. on 225 mg. and 128th d. on 200 mg./kg. body wt. as aqueous soln.[5386]	S.C	Tumors[5387]	8 at 280 d	360 d.
Squillaci, G., and DiMaggio, G., 1955.	4 rabbits		M	1 g./Kg. body wt. daily for 40 d	P.O	0[5388]	Sacrificed at 40 d	40 d.
Kirby, K. S., 1960	10 rats	August		1 ml./wk. for 12 wks.[5389]	S.C	0	Killed at various times.	At least 1 yr.
	Mice	Stock		0.25 ml./wk. for 12 wks.[5389]	S.C	Tumors[5390]		

[5355] Carbowax 400 controls normal.
[5378] Interfallicular epidermal hyperplasia.
[5379] Span 85.
[5380] 1/1 benign dermal tumor at 19 wks.
[5381] 1/1 = 2%.
[5382] Hepatic and renal necrotic lesions.
[5383] As the adipate.
[5384] Fed low casein, high fat diet.
[5385] 13 hepatomas, 7 cholangiomas. Hepatic cirrhosis. Controls negative.
[5386] Fed high casein, low fat diet.
[5387] 7 hepatomas, 4 cholangiomas. Hepatic cirrhosis. Controls negative.
[5388] Toxicity Study.
[5389] Sulphited.
[5390] 7 hepatic.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
1034. TOXAPHENE[5391]								
Ortega, P., et al., 1957	12 rats	Sherman white	6 āā	200 ppm. in diet up to 9 mos	P.O	0[5392]	Killed at intervals	9 mos.
	12 rats	Sherman white	6 āā	50 ppm. in diet up to 9 mos	P.O	0[5392]	Killed at intervals	9 mos.
Allen, M. J., et al., 1957	20 mice			1 part/4 parts cholesterol in 9–11 mg. pellet implant.	Urinary bladder	Tumors[5393, 5394]	7 at 52 wks	52 wks.
1035. VERSONAL FE[3]								
Haddow, A., and Horning, E. S., 1960.	20 mice	Stock		0.2 cc. wkly. for 46 wks	S.C	0	17 at 12 mos	12 mos.

ADDENDA

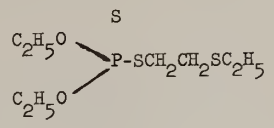
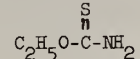
A. INORGANIC COMPOUNDS

1036. MANGANESE[5396]								
Kuboyama, H., Fukuoka Igaku Zasshi *48*, 41–60 (1957).	Rats				Inhalation	0		7 mos.
	Rabbits				Inhalation	0		7 mos.

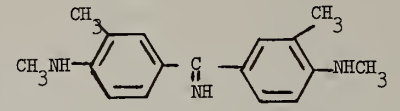
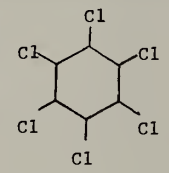
B. 1. ALIPHATIC COMPOUNDS

1037. CALCIUM CYANAMIDE $CaCN_2$								
Akabane, J., J. Fac. Med. Shinshu Univ. *4*, 99–113 (1954).	Dogs			0.1–0.5 g./kg. body wt		0		30–90 d.

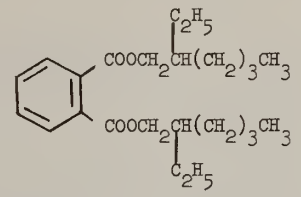
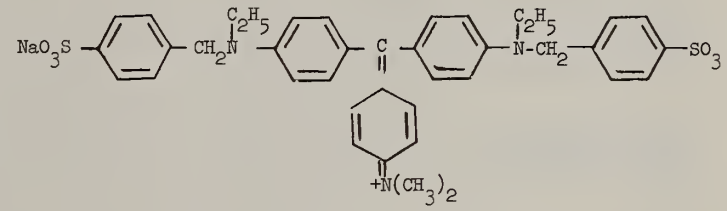
[5391] Approx. formula: $C_{10}H_{10}Cl_8$ (a chlorinated camphene).
[5392] Hepatic morphological changes.
[5393] 2 with papilloma or adenoma, 2 with urinary cystic carcinoma.
[5394] 1/24 cholesterol controls with urinary cystic carcinoma.
[5396] Various forms.
[5397] Quartz.
[5398] Contained 99.2% SiO_2; particle size less than 3.6 μ.
[5399] Hepatic fibrosis at 225 days.
[5400] 2 spindle cell sarcomas, 4 fibrosarcomas.
[5401] Mammary, first at 5.5 mos.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
1038. DI-SYSTON[5402] 								
Bombinski, T. J., and DuBois, K. P., 1958.	5 rats	Sprague-Dawley.	M & F	1.0 mg./kg. daily for 60 d	I.P		1 died at 10 d	60 d.
	10 rats[5403]	Sprague-Dawley.	M & F	0.25 & 0.5 mg./kg. daily for 60 d	I.P		100%	60 d.
	10 rats[5403]	Sprague-Dawley.	M & F	1.2 and 1.5 mg./kg. daily for 30 d	I.P		2 at 10 d	30 d.
1039. ETHYLENEDIAMINE TETRAACETIC ACID, DISODIUM SALT $(NaOOC—CH_2)_2NCH_2CH_2N(CH_2—COONa)_2$								
Shibata, S., Nibou Yakurigaku Zasshi (Folia Pharmacol. Japan.) *52*, 113–120 (1956).	3 rabbits		M	5% in water, 0.1 mg./kg., 1 mg./kg., 10 mg./kg. and 20 mg./kg.	I.V	0		30 d.
	3 rabbits		M	5% in water, 50 mg./kg., 100 mg./kg., 500 mg./kg. and 1 g./kg.	P.O	0		30 d.
1040. TRICHLOROETHANOL CCl_3CH_2OH								
Bartonicek, V., Arch. f. Gewerbepath. u. Gewerbehyg. *18*, 317–326 (1960).	6 rabbits		M & F	1 ml. in olive oil 3 times wkly	I.M	0		7 wks.
1041. XANTHOGENAMIDE 								
Berenblum, I., et al., 1959	26 mice	Swiss	M & F	2 mg. in saline soln. once, 4 d. subsequent treated with twice-wkly. skin applications of 5% soln. croton oil in liquid paraffin for 40 wks.	I.P	0[5407,5408]	All sacrificed at 40 wks.	40 wks.

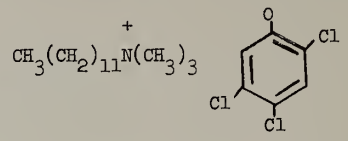
[5402] Phosphorodithioic acid, 0,0-diethyl S-[2-(ethylthio)ethyl]ester.
[5403] 5/group.
[5404] Pulmonary.
[5405] Killed at 49–133 days.
[5406] Pulmonary.
[5407] 4/25 with papillomas (0.15 ± 0.05 tumor/mouse). 4/23 with pulmonary adenomas (0.2 ± 0.1 tumor/mouse).
[5408] 46 croton oil controls with 11 papillomas and 2 pulmonary adenomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
1042. AURAMINE G[5409]  ·HCl								
Umeda, Masao, 1957	40 mice	Mixed	M & F	Mixed evenly at rate of 0.15% in rice diet. Total of 718 mg.	P.O	0	9 survived 150 d. or more.	369 d.
	10 rats	Hybrid		1 cc. of 0.5 g./10 cc. susp. in water once or twice a wk., after 20 d., increased to 2 cc. Total of 185–245 mg.	S.C. inj .in back	0[5410]	5 survived 200 d. or more.	463 d.
1043. BENZENE HEXACHLORIDE, GAMMA ISOMER[5411] 								
Klimmer, O. R., 1955	48 rats	White	M	10 mg. pK. in peanut oil (gastric tube) daily.	P.O	0		17 mos.
	48 rats	White	M & F	32 mg. pK. aq. emuls. (gastric tube) daily.	P.O	0	54% at 26 wks	6 mos.
	48 rats	White	M & F	32 mg. pK. in oil (gastric tube) daily.	P.O	0	17% at 26 wks	6 mos.
Tilgner, S., 1955	10 mice			1:10 cc. mixed in the food	P.O		Sacrificed after 90 d.	90 d.
	5 mice			1:10 cc. mixed in the food for 23 injs. 20–40 mg./kg. as a 0.45 soln. in rape-oil twice.	P.O. (stomach tube).		Identified after 132 d.	132 d.
Treon, J. F., and Cleveland, F. P., 1955.	4 dogs	Beagles	2 M, 2 F	15 ppm. in diet 6 d./wk. for 15.6 mos.[5412]	P.O	0	100%	15.6 mos.

[5409] Color Index No. 656.
[5410] 1 with mammary fibroadenoma (probably spontaneous).
[5411] Lindane.
[5412] Recrystallized.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
1044. 2-ETHYLHEXYL PHTHALATE 								
Harris, R. S., et al., 1956	86 rats[5435]	Albino-Wistar	43 āā	0.5% in basal diet for 24 mos	P.O	Tumors[5436]	Total of 18 rats killed at 3, 6 & 12 mo. intervals. Few survived 24 mos.	24 mos.
	86 rats[5435]	Albino-Wistar	43 āā	0.1% in basal diet for 24 mos	P.O	Tumors[5437]	Total of 18 rats killed at 3, 6 & 12 mo. intervals. Few survived 24 mos.	24 mos.
	1 dog		M	5 g./kg. daily for 14 wks	P.O. (stomach tube).	0	14 wks	14 wks.
	1 dog		F	0.1 g./kg. mixed in diet, daily for 14 wks.	P.O	0	14 wks	14 wks.
Hodge, H. C., et al., 1954	15 rats	Albino	F	35, 100 and 300 ppm. in diet	P.O	0	Some died in highest level group.	30 d.
1045. F D & C VIOLET #1 								
Nelson, A. A., and Davidow, B., 1957.	18 rats	Obsorne-Mendel.		2% aqueous soln.; 20 mg./wk	Inj.	Tumors[5415, 5416].		

[5413] L-threo-1-p-nitrophenyl-2-dichloracetamide-1,3-propanediol.
[5414] No pathology.
[5415] 14 with injection site fibrosarcomas.
[5416] Saline controls negative.
[5435] Weanling.
[5436] 2 fibroliposarcomata (unrelated).
[5437] 1 fibroliposarcoma (unrelated).

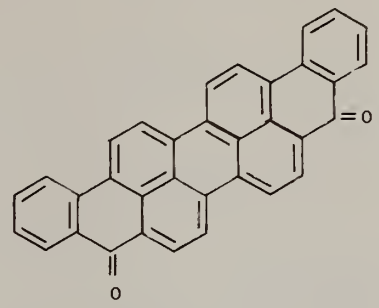
Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
1046. TRIMETHYL-LAURYL-AMMONIUM-2,4,5-TRICHLOROPHENATE 								
Sato, H., Oto, N., Maruganin, M., Michizama, T., and Yamashita, A., Nara Igaku Zasshi (J. Nara Med. Assoc.) *8*, 224–6 (1957).	34 rats	Albino	M & F	At least 0.05 mg. per 100 g. body wt. per d. per rat, in food.	P.O	0		371 d.

B. 6. PENTACYCLIC

1047. METHYL CHOLANTHRENE

Prokofieva, E. I., Vopr. onkol. Leningrad 2(1):29–38, 1956.	Rabbits				Inj. into tibia metaphysis.	Sarc.[5423]		
Iwai, H., Tohuku J. Exper. Med. *65*, 156 (1957).	Mice[5425]	dd	M & F	1% in PUP	I.P	Tumors[5427]		At least 8 mos.
Mizutani, K., Showa Med. J. *1*, 60–70 (1959).	Mice	d–d		1.5% in benzene, 2 times wkly. for 5 wks. and wkly. for 5–6 wks.	Skin painting	Tumors[5428]		At least 11 wks.
Sugiwachi, R., Igaku Kenkyu *29*, 2034–2049 (1959).	63 mice[5429]	C3H			Inj. into glandular stomach.	Tumors[5430]		
Benkö, S., Kovács, K., and Tiszai, A., Kisérletes Orvostudomány *9*, 172–8 (1957).	150 rats	White	M & F		Inj. into stomach wall.[5431]	Tumors[5432]		504 d.

[5422] Vaginal and urinary cystic sarcoma-like lesions. Controls comparable.
[5423] Osteogenic.
[5426] Age: 1–7 days.
[5427] High incidence of pulmonary tumors (benign papillary adenocarcinomas).
[5428] Malignant lymphomatosis.
[5429] Survivors.
[5430] Adenocarcinomas.
[5431] Some received twice daily S.C. injections of atropine; some physostigmine; some no secondary treatment.
[5432] Forestomach carcinoma, gastric sarcoma, other sarcomas.

Reference	Animal	Strain or type	Sex	Preparation and dose	Site and route	Animals with tumors	Survival	Duration of experiment
1048. DIBENZANTHRONE[5433] 								
Umeda, M., 1956	15 rats			2 cc. of 2.5 g/10 cc. once a mo	S.C	0	7 at 300 d	At least 300 d.

[5433] Indanthrene Dark Blue BO.

A

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